

THE TECHNOLOGY REVIEW

OCTOBER 1930



technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.

The history of vacuum systems of steam heating is a history of Warren Webster & Company

In 1888, Warren Webster & Company introduced the Webster Vacuum System of Steam Heating. Even in its early crude form the then new idea achieved marked success. It was fundamentally right for the needs of the day.

Through forty-one years this system has been steadily improved to meet changing needs. Today there are more than fifty thousand Webster Systems heating America's finer-type buildings.

Essential to the fullest development of the Webster Vacuum System was a radiator return trap of certain characteristics. Webster provided this in the Sylphon Trap, introduced in 1910.

Since that time Webster engineers have

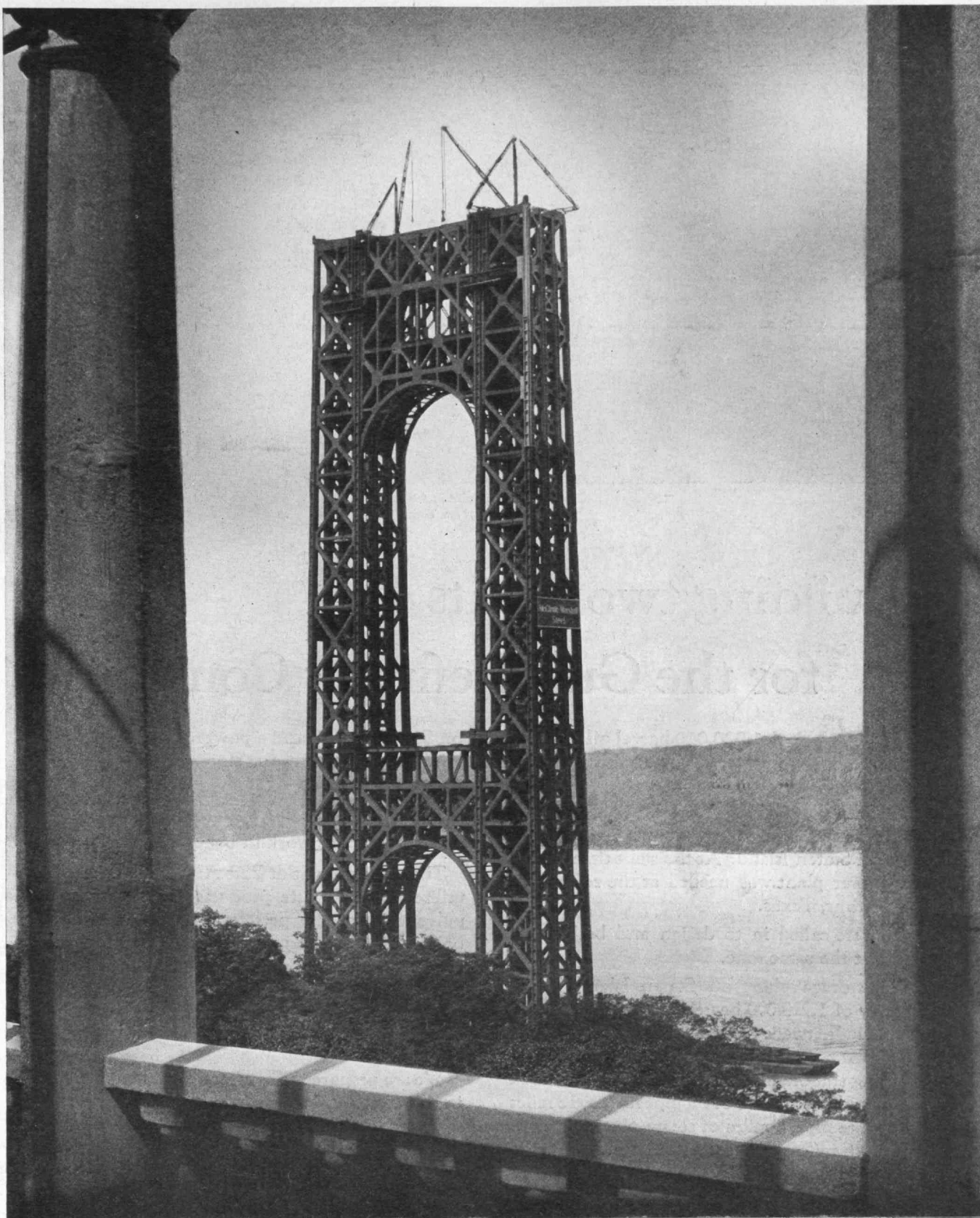
made many improvements and refinements in the original Sylphon Trap, and to date more than three million have been installed. Of this total less than one-half of one per cent have been recorded as replaced for all causes.

More than forty years ago, when even the idea of service was new to business, Webster saw the necessity for service to insure correct application of Webster Systems, and began building up an organization of steam-heating specialists.

Today one of the most important factors in Webster Systems is Webster Service—working with architects, engineers, contractors and owners to insure heating comfort and economy.

M. I. T.'s own engineering department, in 1916, adopted a Webster System as standard for all existing and future buildings. Fourteen years of satisfaction; with negligible maintenance and replacement costs. In all that time, if any better system could have been found, the best people to find it were right there at M. I. T. The New dormitory units, 1930, are equipped with Webster Systems.

WARREN WEBSTER & COMPANY, Camden, New Jersey
Pioneers of the Vacuum System of Steam Heating...Founded 1888
52 U. S. Branch Offices...In Canada, Darling Bros., Ltd., Montreal



WORLD'S LARGEST BRIDGE

Tower for the Hudson River
Bridge now being constructed
56,000 TONS OF STEEL

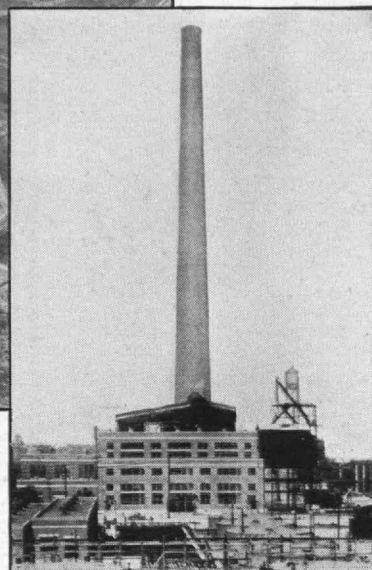
Built by

McClintic-Marshall



BULK STORAGE PLANT
Staten Island, New York

POWER PLANT
Port Arthur, Texas



Building two plants for the Gulf Refining Company

A 1,920,000 barrel oil storage plant on Staten Island, and a power plant at Port Arthur, Texas, built simultaneously in fast time.

TO SERVE the New York Market, the Gulf Refining Company required a new storage plant on Staten Island. At the same time a large new power plant was needed at the refinery at Port Arthur, Texas.

We were called in to design and build both plants at the same time.

The storage plant on Staten Island has a capacity of 1,920,000 barrels, occupies 110 acres, and includes twenty-four 80,000 barrel oil tanks, steam plant, two drainage pumping stations, oil pumping station, fire pump and substation, dock for oil tankers, 9 miles of oil pipe mains, 18 miles of foamite pipe, 8 miles of steam pipe, 4 miles of levees, 3 miles of streets and roads, 4 miles

of water mains, 2 miles of electric pole lines.

We did all this work in 6 months' time.

The power plant at Port Arthur, designed to utilize refinery waste products—sludge oil and pulverized paraffin petroleum coke—contains 3 boilers of 15,400 sq. ft. each and a turbine of 10,000kw. capacity. It was also built in six months.

At Staten Island we have been called back to build large additions which are now under construction.

We are prepared to serve industrial companies in the design and construction of storage plants, factories, chemical plants, power plants, or work of almost any nature.

UNITED ENGINEERS & CONSTRUCTORS

INCORPORATED

DWIGHT P. ROBINSON, PRESIDENT

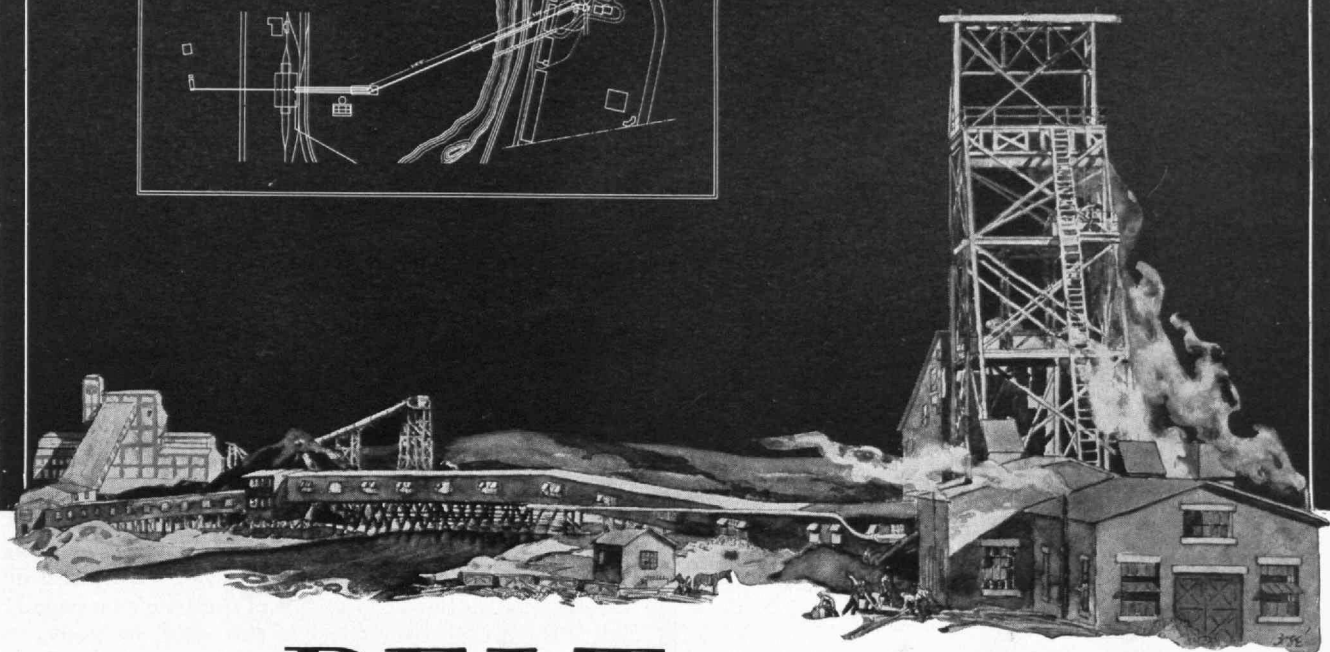
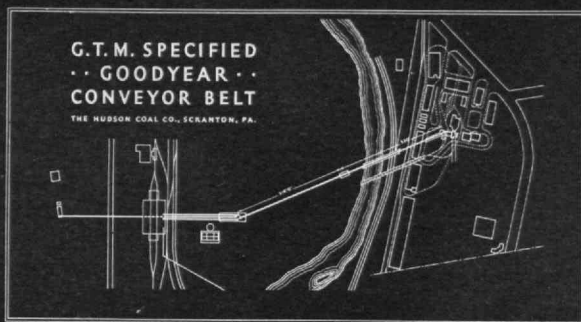
PHILADELPHIA
LOS ANGELES

NEW YORK
MONTREAL

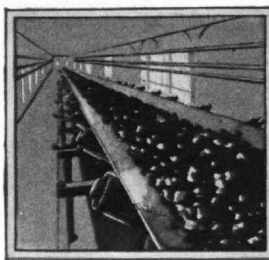
NEWARK
BUENOS AIRES

CHICAGO
RIO DE JANEIRO

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED



The **BELT** *that moved a mountain*



*Conveyor equipment supplied by
Heyl & Patterson, Pittsburgh, Pa.*

across a river

At the Marvine Colliery of The Hudson Coal Company, Scranton, Pa., in 1921 were two isolated mine shafts, one on either side of the Lackawanna River. For efficiency in grading and shipping operations, obviously coal from one shaft had to cross the river—an extraordinary mechanical feat. Now for nine years a tireless Goodyear Conveyor Belt—over 2100 feet in over-all length, 48"

wide, 7-ply construction, moving at 300' per min.—has carried, without noticeable signs of wear, safely and easily across the river the mammoth production of Shaft No. 1 of this famous colliery. Over 1,700,000 tons—literally, a mountain of coal!—has been so transported at a belt cost to date of less than \$.0000062 per ton-foot!

Your mountain, too, can be moved! The G.T.M.—Goodyear Technical Man—will help you move it. He is a rubber expert. He knows how to apply rubber—in Belting, Hose, Molded Goods, and Packing—to your considerable benefit. For data on the greater profits he can bring to your business, just write to Goodyear, Akron, Ohio, or Los Angeles, California.

THE GREATEST NAME

IN RUBBER

GOODYEAR

BELTS

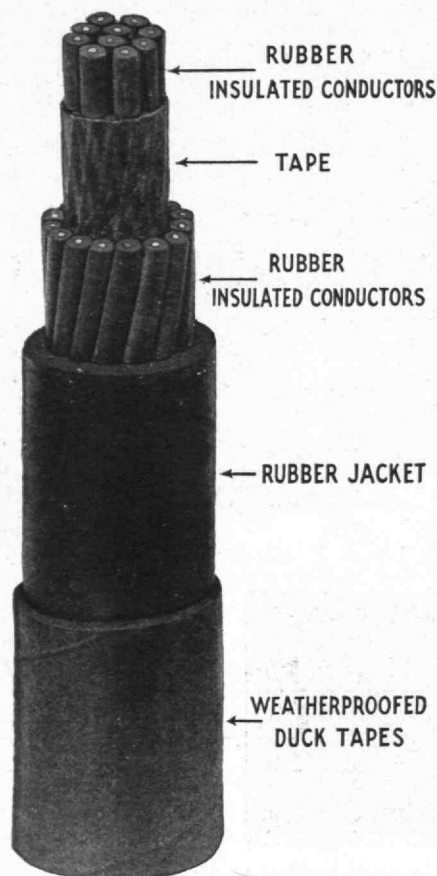
MOLDED GOODS

HOSE

PACKING

Copyright 1930, by The Goodyear Tire & Rubber Co., Inc.

SIMPLEX NON-METALLIC UNDERGROUND CABLE



TYPE R J

Simplex Non-Metallic Underground Cables provide a thoroughly dependable means of underground distribution at reasonable cost.

These cables are made in two types, Type WP protected by a series of weatherproofed tapes, and Type R J protected by a rubber jacket and weatherproofed tapes.

They are recommended for municipal street lighting, "white way," traffic signal installations, park, playground, or airport lighting and low voltage power distribution.

Simplex Non-Metallic Underground Cables are acid, alkali and water proof. They are light in weight, more flexible than cables protected by metallic sheaths and can be easily and quickly installed. Write for more complete information.

SIMPLEX WIRE & CABLE CO

MANUFACTURERS

201 DEVONSHIRE STREET

BRANCH SALES OFFICES

CHICAGO, 564 W. Monroe St. SAN FRANCISCO, 390 Fourth St.
NEW YORK, 1328 B'way CLEVELAND, 2019 Union Trust Bldg.
PHILADELPHIA, 1227 Fidelity-Philadelphia Trust Building
JACKSONVILLE, 417 Barnett National Bank Building

THE TABULAR VIEW

THE next best thing to knowing a person is to read what he has written, and Gerrit A. Beneker expresses his ideas and personality in his writing with the same insight and energy that is characteristic of his art (see cover). Beneker was born in Grand Rapids, Mich., on January 26, 1882. After his graduation from the city high school, he turned from the more conventional life to learn the mechanics of art which was to be his life work. On leaving art school, he became the pupil of Charles W. Hawthorne of Provincetown. He is now living at Truro, Mass. Once established, Beneker turned from the realm of pure art to philosophical art. He has lectured much on the general subject of art in its relation to various aspects of the business and social world, stressing always, as he has done in his article for *The Review*, the art of living a good and useful life. In this respect, he is reminiscent of the Nineteenth Century thinkers — rather a modernistic Ruskin, Arnold, and Hazlitt, crying out against the Twentieth Century apostles of "art for art's sake." He is himself something of a constructive radical. Perhaps he is best known to the public for his famous poster "Sure! We'll Finish the Job," of which three million prints were distributed on the last Victory Loan. As author of the article on page 11 and as the artist of the cover of this issue, he speaks to *Review* readers in two mediums.

AMERICANS interested in the much heralded five-year program of the Union of Socialist Soviet Republics will find an engineer's interpretation valuable and informative, and *The Review* is happy to present such a paper. As stated in the Editorial Note preceding the article, it is not expedient to divulge the name of the author. Suffice it to say that he is prominent in both business and engineering circles. His article will be published in two parts; the next appearing in the November issue of *The Review*.

PROFESSOR FREDERICK G. KEYES has long been interested in the physical properties of steam. In 1921 a group of scientists and engineers laid out a comprehensive program of steam research, sponsored by the American Society of Mechanical Engineers, to be carried on jointly by Harvard, the Bureau of Standards, and the Institute. As Head of Technology's Department of Chemistry, Professor Keyes has had direct charge of the steam research here, and it was to make a report on his progress that he journeyed to Berlin and the meeting of the World Power Conference, of which he writes on page 18.

ARTHUR H. COMPTON holds a high rank among the world's experimental scientists. As proof of this one need only to point to the fact that in 1927 he was awarded the Rumford Gold Medal by the American Academy of Sciences and that in the same year he was honored by being awarded the Nobel prize in physics. A contributor to a recent number of *Science* has noted that "everything he undertakes has been so carefully planned that signifi-

(Continued on page 6)



Union & New Haven Trust Company Building
New Haven, Connecticut
Cross and Cross . . . Architects . . . New York

Johnson Heat Control In This Building

The first floor, mezzanine and half the basement are used as banking and safe deposit quarters. This space is heated by direct radiation, automatically controlled by 21 Johnson wall thermostats connected directly with Johnson valves on the radiators. The indirect heating system, which also serves to ventilate this space in summer, consists of exhaust and supply fans, the latter equipped with oil screen filters. The heating units in this system and the louvres controlling the air supply are controlled by Johnson Thermostats. Louvres are also in the bank's skylights, and are operated by Johnson Control from a switchboard panel in the Superintendent's

office. General offices, from the second to the twelfth floors, inclusive, are heated by direct radiation; and the steam supply is divided to heat independently five tiers, each Johnson Controlled from the switchboard panel in the Superintendent's office.

Johnson Control applies to every system, form and plan of heating and ventilating: interestingly described complete in the Johnson book, sent gratis on request.

JOHNSON SERVICE CO., 149 E. Michigan St. MILWAUKEE, WIS.

ESTABLISHED 1885

BRANCHES IN ALL PRINCIPAL CITIES

THE ALL METAL SYSTEM. THE ALL PERFECT GRADUATED CONTROL OF VALVES & DAMPERS. THE DUAL THERMOSTAT CONTROL



J. G. RUSSELL COMPANY

INCORPORATED

103 BOSTON STREET

SOUTH BOSTON, MASSACHUSETTS

Designers and Builders

of

**TOOLS, GAGES, AND SPECIAL
MACHINERY OF ALL KINDS**



Each member of our firm has had a wide experience in designing and building equipment for textile, paper, and chemical industries. . . . Our experience in the construction of automatic machinery is exemplified in the work executed for the Gillette Safety Razor Company.



Address all inquiries to

J. G. Russell, '13 or H. Russell, '16

ADVERTISING

IN

The Technology Review

IS READ BY

EXECUTIVES AND ENGINEERS

The REVIEW readers represent the
following classes:

1. 56.7% Executives
(Chiefly in engineering firms)
2. 34.4% Professional Engineers and
Architects
3. 8.9% Miscellaneous and Unclassified
100%

Detailed Analyses on Request

Address all inquiries to:

BUSINESS MANAGER

The Technology Review, M. I. T., Cambridge, Mass.

THE TABULAR VIEW

(Concluded from page 4)

cant results have followed sooner than anyone has a right to expect. He has made a brilliant contribution to the theory of light." ¶ In his article beginning on page 19 his explorations in the field of atomic structure are described. It is noteworthy that at the end of his article he remarks that in 1922 he predicted that within ten years the electron positions in the lighter atoms would probably be known as reliably as were, at that time, the positions of the atoms in certain crystals. Investigations, which he describes in his article, indicate that that prediction is now verified. ¶ Dr. Compton was born in Wooster, Ohio, where later he attended the college of that name. His graduate work was done at Princeton and at Cambridge University, England. At the present time, he is a professor of physics at the Ryerson Physical Laboratory at the University of Chicago. He is a brother of Dr. Karl T. Compton, President of the Institute.

AFTER Mr. McDaniel's article on the Baha'i Temple was in print, news came of the tragic death of its designer, Louis Bourgeois. The greater part of Mr. Bourgeois' later life had been spent in developing his plans for this temple. Although he did not live to see it realized in stone and steel, work is going ahead rapidly, and many architects predict that it will be a notable and unique contribution to ecclesiastical architecture. Mr. McDaniel, a graduate of the Institute in the Class of 1901, is a member of the Research Bureau in Washington, a private firm of consulting engineers who have been retained as managing and supervising engineers. He therefore writes with direct and specific knowledge.

JOHN BAKELESS really needs no formal introduction to the careful Review reader as he has contributed several times since 1928. His interests in the outside world have been chiefly academic as befits the life of an author and editor. After graduation from Williams and Harvard, where he received his Master's degree, literary ambition led him into editorial work, first on *The Living Age*, and later on the *Independent*. As managing editor of *The Forum* he has continued to enlarge his literary activities. Since 1927, he has been a lecturer in journalism at New York University. Besides contributing to various magazines, Mr. Bakeless is the author of two books: "The Economic Causes of Modern War" and "The Origin of the Next War." His interest in economic conditions and the increased use of science to remedy social and international evils was illustrated in his article "Science and the World of Affairs," published in the April Review 1929.

A FEATURE of the November issue will be an article by Stuart Chase, '10, "Prometheus Enchained," the thesis of which is that modern engineers have never recognized their power or potential value to society. "The greatest need in all the bewildered world," writes Mr. Chase, "is for philosopher engineers."

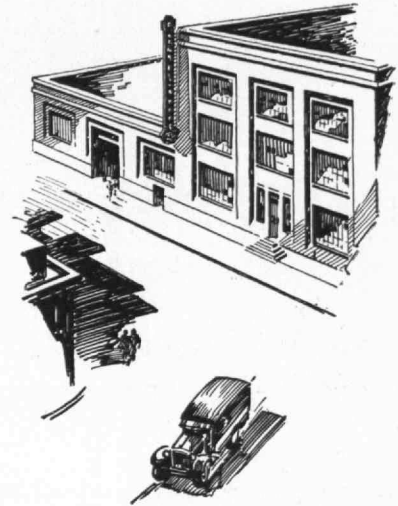
"We Want An Economical Building"

EVERY phase of building—and there are many—must be carefully considered in any class of construction today. When the Metropolitan Edison Company, Reading, Pa. decided to build a modern utility building, store house and garage to serve its big Middletown power station and large surrounding customer territory, engineers of W. S. Barstow & Company, Inc., were called in.

"It must be an economical building," the company officials said.

The engineer assigned to this work planned not only to build economically but to keep down the future costs as well. His knowledge of fire hazard and close contact with insurance brokers alone meant savings of thousands of dollars. An engineering firm of long experience, the W. S. Barstow Company is familiar with building detail that will later mean economical operating costs. See us about the building job you are contemplating.

Send for Construction Booklet.



W. S. BARSTOW & COMPANY, INC.

Engineering—Design—Construction

120 Wall Street
New York, N. Y.

412 Washington Street
Reading, Pa.

BUILDERS AND ENGINEERS FOR THE BUSINESS LEADERS OF AMERICA

EVEREADY



SKF

VANADIUM



Domino

Firestone



Victor

THE
EDISON ELECTRIC
ILLUMINATING COMPANY
OF BOSTON

CURTISS-WRIGHT
FLYING SERVICE



Westinghouse



Ford

Scott Tissue



New York
New Haven
and
Hartford
RAILROAD



WESTERN
UNION

STANDARD OIL
OF NEW JERSEY



LUX

CONOWINGO

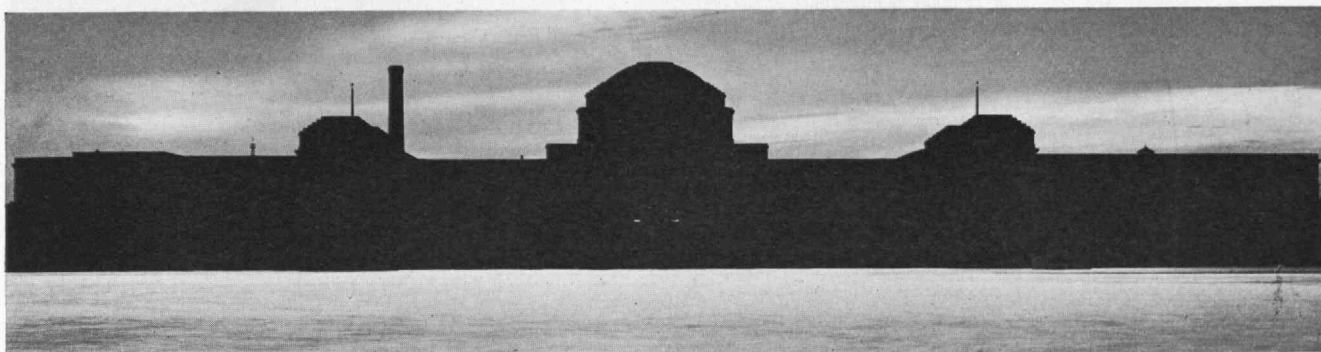
Business leaders know from actual experience that they can depend upon Stone & Webster Engineering Corporation to meet required completion dates for construction projects. Construction is carried on economically and efficiently. Operation of the completed plant, office building, structure, or development meets every requirement. Our personnel, with a background of over one billion dollars' construction experience, is of a calibre well suited to work with your entire organization.

During the last ten years, more than 75% of our work has been for concerns not connected in any way with Stone & Webster interests. Our service is immediately available to you for any problem in modern building and engineering work.



STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INCORPORATED



M. I. T. Photo

THE TECHNOLOGY REVIEW

Edited at the Massachusetts Institute of Technology

VOLUME XXXIII

1 1 1

NUMBER 1

Contents for October, 1930

FOG	FRONTISPIECE	10
<i>New York's Queensboro Bridge</i>		
ART AS AN AID TO INDUSTRY	By GERRIT A. BENEKER	11
<i>"There is a Higher Work for Art than the Arts"</i>		
INDUSTRY AND ENGINEERING IN THE UNION OF SOCIALIST SOVIET REPUBLICS		
Part One	By AN AMERICAN ENGINEER	14
SAVING COAL BY SCIENCE	By FREDERICK G. KEYES	18
<i>The International Agreement on the Properties of Steam</i>		
LOOKING INSIDE THE ATOM	By ARTHUR H. COMPTON	19
<i>X-ray Scattering and the Structure of Atoms</i>		
"THE CONSCIOUS STONE TO BEAUTY GREW"		22
<i>Photograph of Irving Trust Company Building</i>		
A TEMPLE OF LIGHT	By ALLEN B. McDANIEL	23
<i>"The First New Idea in Architecture Since the Thirteenth Century"</i>		
<hr/>		
THE TABULAR VIEW		4
<i>Notes on Contributors and Contributions</i>		
THE TREND OF AFFAIRS		25
<i>The Past Month in Science and Engineering</i>		
BOOKS		35
<i>Review and Comment</i>		
THE INSTITUTE GAZETTE		37
<i>Relating to the Massachusetts Institute of Technology</i>		
THE COVER	From an Oil Painting by GERRIT A. BENEKER	
<i>"The Constructive Radical"</i>		

CONTRIBUTING EDITOR
JOHN J. ROWLANDS

PUBLISHER
HAROLD E. LOBDELL
EDITOR
J. RHYNE KILLIAN, JR.

BUSINESS MANAGER
RALPH T. JOPE

PUBLISHED monthly on the twenty-seventh of the month preceding the date of issue at 50 cents a copy. Annual subscription \$3.50; Canadian and foreign subscription \$4.00. Published for the Alumni Association of the Massachusetts Institute of Technology. Thomas C. Desmond, '09, President; Francis J. Chesterman, '05, George K. Burgess, '06, Donald G. Robbins, '07, Vice-Presidents.

Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 11-203, Massachusetts Institute of Technology, Cambridge A, Mass. Entered as Second-Class Mail Matter at the Post Office at Concord, N. H. . . . Copyright, 1930, by The Technology Review. . . . Three weeks must be allowed to effect changes of address. Both old and new addresses should be given.



Ameyra

FOG

NEW YORK'S QUEENSBORO BRIDGE. ITS SPANS OF 1,182 FEET ARE AMONG THE LONGEST
CANTILEVERS IN THE UNITED STATES

THE TECHNOLOGY REVIEW

VOLUME 33

OCTOBER, 1930

NUMBER I

ART AS AN AID TO INDUSTRY

"There Is a Higher Work for Art than the Arts"

BY GERRIT A. BENEKER

IN 1919 a steel mill in Cleveland put me on its executive staff, built me a studio close beside the tall factory chimney, and gave me *carte-blanche* to paint and write what I wished. A few months later I was put on the industrial relations advisory board of the company.

Why not? Why should not a steel mill employ an artist? Did not the great Rubens act as a negotiator between England and Spain, and did he not induce Velasquez, a Spanish youth of twenty-four years, to paint "The Forge of Vulcan" — a masterpiece of peace propaganda no less than of painting? Here in my studio beside the chimney of the power house was the opportunity to make art serve to increase goodwill and understanding between capital and labor, to reveal man to himself and to his fellow men.

Desiring first to do a portrait, I went in search of a man and the young vice-president suggested that I look up a chap named Peggy Hirsch, a truck driver. The transportation manager did not want to let him off, saying, "Can't you pick someone else? Peggy is worth any two truck drivers in Cleveland." Of course, this made me want Peggy all the more and we went in search of him.

Over in the garage we found a pair of overalled legs sticking

out from beneath a truck. Between blows of his hammer were heard staccato cuss words for Peggy cursed as easily as he breathed. He did not wipe his hand on his overalls when we met; he did not wipe it at all; he smeared mine all over with grease, but I did not object for this is the way an artist should get his contact with everyday life.

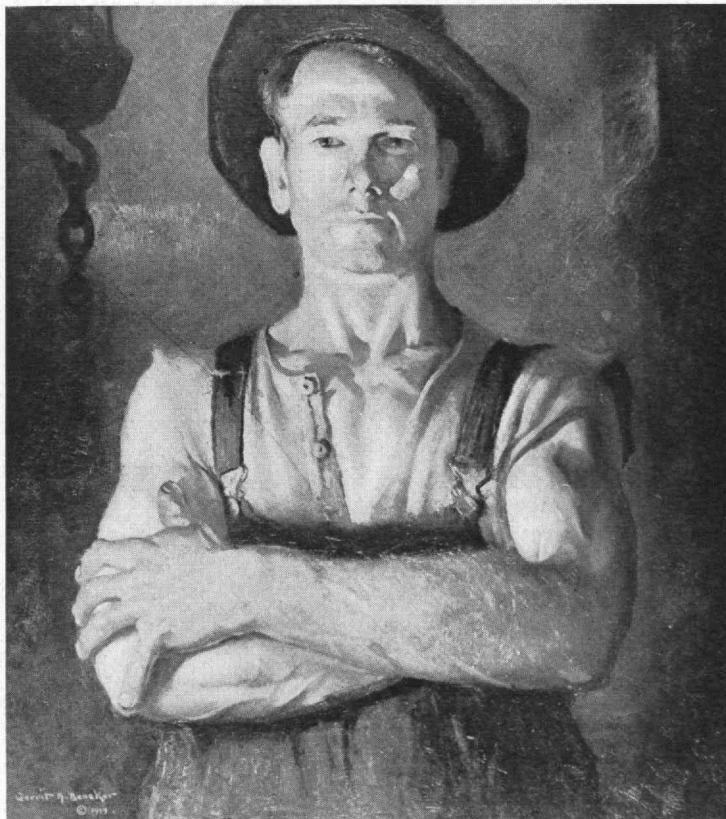
"Not by a damn sight! I'm black enough!" was the reply when I told him I wanted to paint him. With that he went back under the truck and the next day there was no Peggy around the works. The second day, by appoint-

ment, he sat in the employment manager's office, twisting his old hat and wondering what was going to happen to him. I went up to him, put one hand on his shoulder and asked if he did not think it as high an honor as a man could wish that his boss should pick him out to be the first man out of some five thousand to have his portrait painted?

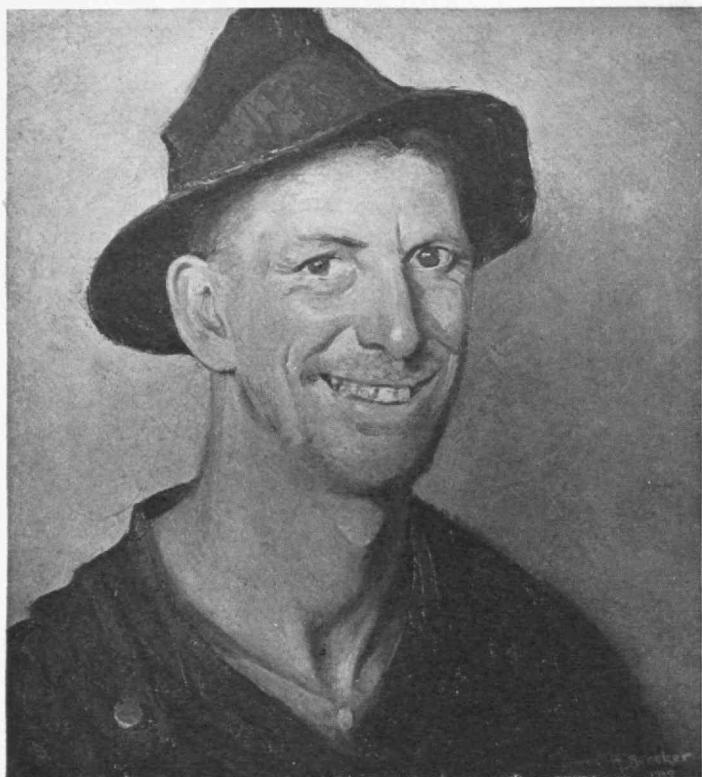
"What have I got to do?" he asked.

"All you have to do is sit still while I work," I replied.

"Oh, hell!" he exclaimed, "I can't sit still." It is not easy for any man who bubbles over with spirit to sit still, but he came. I sat him down on a little stepladder three steps high and there he remained, expressionless,



MEN ARE SQUARE, AN OIL PAINTING EXECUTED IN THE MILLS OF THE HYDRAULIC STEEL COMPANY, CLEVELAND, OHIO, AS AN EXPRESSION OF MUTUAL FAITH AND TRUST BETWEEN EMPLOYER AND EMPLOYEE



© Gerrit A. Beneke

THE ALABAMA KID — "... THAT FELLOW HAS MORE COÖPERATIVE SPIRIT THAN ANY OTHER FELLOW AROUND HERE"

glum, a rivulet of brown trickling from the corner of his mouth, a bulge in one cheek, while I plastered paint on canvas with a palette knife. I had worked for half an hour, establishing the relative values of flesh to background, when he exclaimed, "Hey, how long is this going to take?"

"Why, I've only just begun," I replied.

"Well," he argued, "I've got to get back and fix them trucks. They're waiting for them."

"Oh, no you don't," I parried, "I have the authority to haul any man off the job on company time long enough to paint him, providing he is willing, and you wouldn't be here if you weren't willing." He continued to sit.

After a while I reached a place where I wanted some expression in that piece of clay so I told him a funny story. He grunted. I asked him if that hurt.

"What?" he asked.

"Weren't you trying to laugh?"

Then he did laugh, and from then on he would snap on that crooked smile as you turn on an incandescent lamp whenever I asked for it. He had begun to get interested.

"Say, can I see what you are doing?" he asked.

"Sure, come on around," I replied. Here was the test. What was it going to be? In his own homely way he burst out, "Well, I'll be damned if it don't look like me!" And before I knew it he had half a dozen of his fellow men there to see this "damn thing" that looked like him. There immediately followed much pounding on broad backs and remarks such as, "Why don't you paint a handsome guy like me?" Several times a day and for several days he kept bringing his fellow men to the studio to see this "damn thing" that looked like him, and some three weeks later a four-color reproduction of

the picture appeared on a publication which went to the five thousand workmen in the four plants and to the stockholders of the company. On the reverse side of the reproduction of the portrait was a little philosophy on the "black hand" and what it stands for today. One could write volumes about black-handed truck drivers and what they are contributing to the well-being of all of us, but I made it an expression of the simple, natural philosophy that grew out of the contact of the artist and his subject matter, supplementing the emotional appeal of the portrait by an intellectual explanation of its meaning.

After the magazine had been published I could not walk through any one of the four plants without being asked, "When are you going to paint me, Ben?" "Who's the next guy on the cover?" Men invited me to their homes to dinner to tell me of their problems, and very soon I was in a position to help the management see the workman's point of view and, in turn, to help the workman reason out his problems.

It was simply a matter of employing art in such a way that it spoke to these people in their own terms, in a language which they understand. It was the artist "lending his mind out" to help people interpret the meaning of many everyday objects, including themselves.

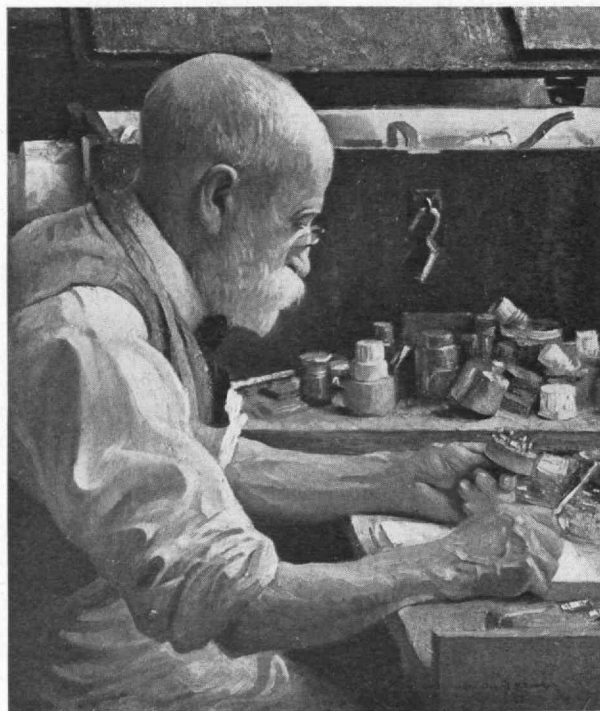
As Browning has so adequately expressed it:

"We're made so that we love

First when we see it painted, things we have passed

Perhaps a hundred times, nor cared to see;
And so they are better painted — better to us,
which is the same thing.

Art was given for that. . ."



© Gerrit A. Beneke

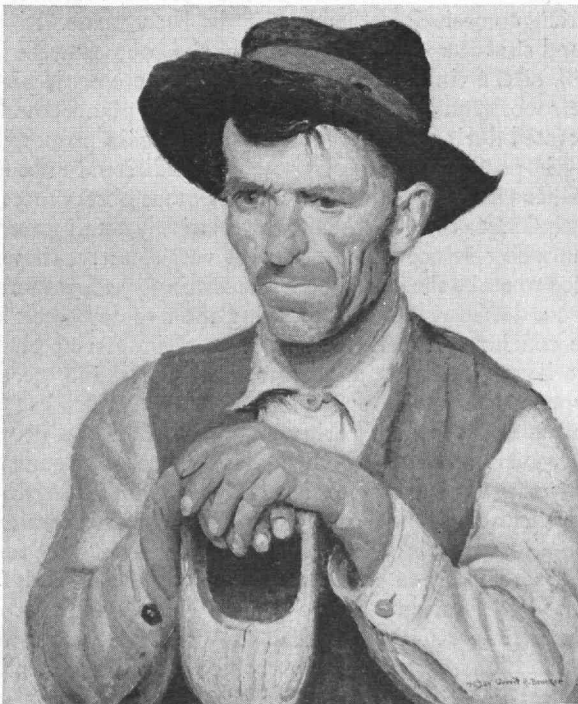
THE INVENTOR — "FOR FORTY-FIVE YEARS HE BENT OVER HIS BENCH INVENTING SOCKETS, INSULATORS, SWITCHES"

It is because the working people can find no art that addresses them in their own terms that our art museums fail to attract them. Instead of finding there art which "addresses him with a voice of lofty cheer" in his own language, the working man sees portraits of millionaires and ladies of fashion, to say nothing of neurotic and over-sexed objects of art which he cannot understand. The museums have not welcomed art that portrays the mainstays of human society. When Millet first sent his paintings of French peasants to Paris salons he was termed a socialist — a dangerous man to society.

SOME of the young men at the head of the company which employed Peggy Hirsch had worked out some industrial relation ideas which were proving to be sound. This was well demonstrated when an epidemic of strikes occurred all about them and only five or six men out of their total of five thousand walked out. In the height of the strife the man whose portrait is reproduced on the cover of this Review wrote to the young vice-president: "Dear Doc: No matter what happens, know that I am with you."

I wanted to see that man. Over in the sheet mill I found him, heating slabs, bringing them to the proper temperature for the roller. He wore a stubble beard to protect his face from the heat of the furnaces. As he stood before me and while I painted, we talked. "Homer," said I, "I'm going to call you a radical."

"Sure, Ben," he replied, "that's the only thing you can call me. Ask some of the boys around here and they will tell you that I used to toss pebbles through the manager's office window just to get his attention [these pebbles were bricks]." "But," he continued, "I don't have to toss pebbles through the manager's window now."



AN ENGINEER FROM THE SOIL — AN EMPLOYEE OF THE GENERAL ELECTRIC COMPANY PAINTED IN 1924



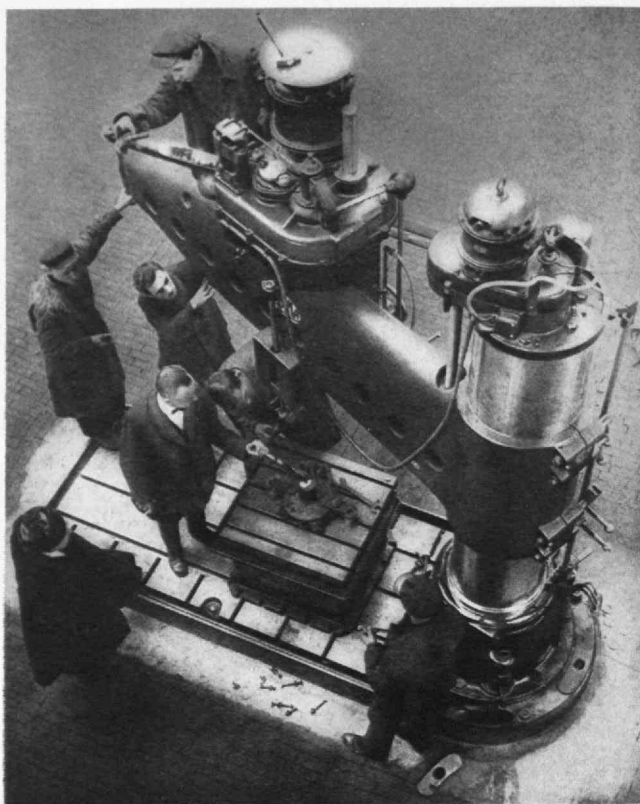
PEGGY — "MY HANDS ARE BLACK BUT MY HEART IS HYDRAULIC."
BENEKER'S FIRST PORTRAIT IN HIS CHIMNEY STUDIO

Why? Homer had been elected by some thirty of his fellow men to be their representative. There were similar representatives elected by other groups and these men had access to the manager's office any time they wanted to see him. When the industrial depression of 1921 arrived and orders were falling off and unemployment increased, the series of strikes I mentioned above were precipitated, but not in this plant; these representatives, such as Homer, met behind closed doors and reasoned matters out together. They concluded that it was better to stay at work, if possible, and to take a cut in wages, so these "radicals" went to their manager and told him they had voted themselves a cut. As conditions grew worse they went again to see the manager and told him they had voted themselves another 10% cut. A few months later as conditions became even more serious they went to him again and said, "Boss, you go out and get the job and we will roll it for any price you can pay and make a profit."

How infinitely better and "radically" different than having absentee directors in Wall Street dictating a 20% cut in wages, leaving the workmen to find it out when they received their pay envelopes! That is what hurts; that is what makes destructive radicals. When men understand, however, they can reason matters out for themselves and they will usually do the right thing. It is a question of leadership, and it is a wise boss who will ask the man who does the job what he thinks about it. Art can help to make men understand because it contributes to the building of character. And the character of any organization is but the sum total of the individuals in it.

There are other reasons why Homer does not throw bricks. He married a school teacher. They had five children, and when I painted him 10 (Continued on page 40)

INDUSTRY AND ENGINEERING IN THE UNION OF



EDITORIAL NOTE: Below is a record of the impressions of an American engineer made on his second professional journey to Russia. His memoranda were set down frankly as a personal record and not with a view to publication; consequently he prefers to preserve his anonymity.

The Review Editors or the reader need not subscribe to the politico-economic doctrines of the Soviet Régime in order to appreciate the valuable first-hand information which these memoranda contain. Since 1924 over 2000 American business houses have received Russian orders, and American exports to Russia in 1929 increased \$54,000,000 over 1928. Consequently, Americans are becoming highly interested in the Soviet Union's development program. The observations in the article below are exceedingly helpful in clarifying many misconceptions about that program.

TESTING A NEW DRILLING MACHINE IN THE "RED PROLETARIAN" MACHINE TOOL FACTORY OF MOSCOW

Moscow, January 31, 1930

IT'S Sunday every day for somebody in Moscow! This would be quite a fetching title for a song. Since one-fifth of the Moscow population celebrates its Sunday each day of the week, the theaters and places of amusement are always crowded, as are the shops and the streets.

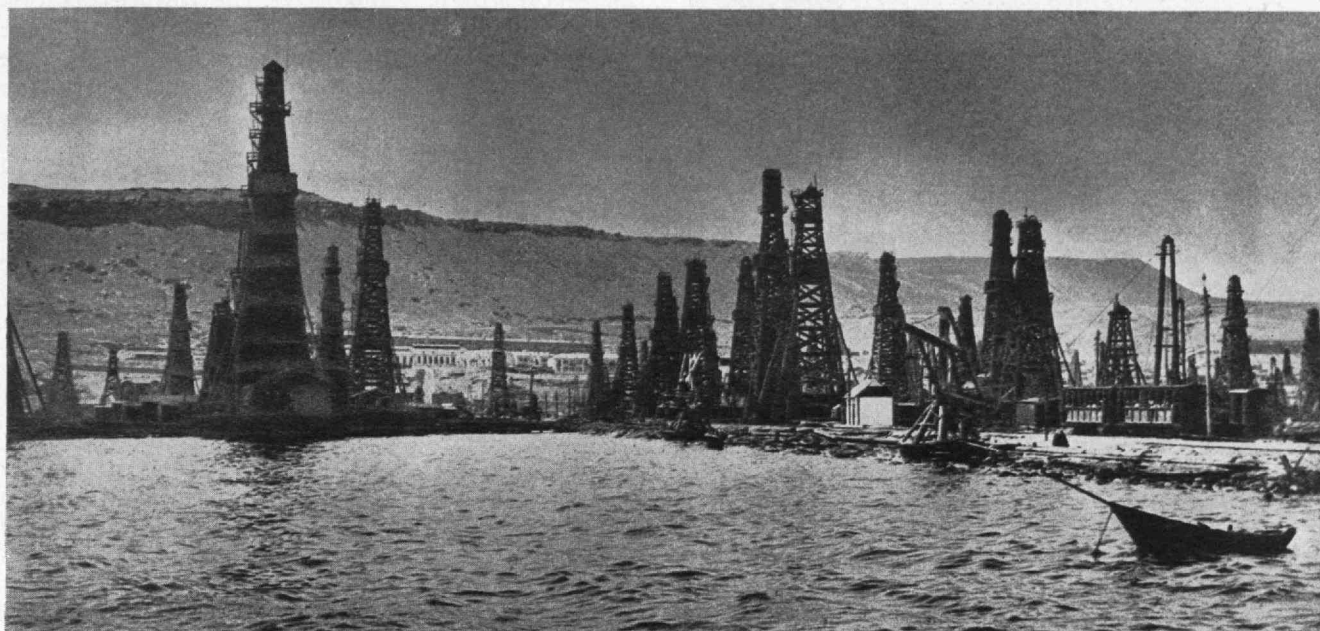
At this hotel last year there was a supper dance every Saturday night, starting after the theater and lasting until about three in the morning. On Sunday afternoons Tea Dances were given in the imposing Marble Hall. Since the new decree making every day Sunday for one-fifth of the population, teas are given daily, and supper dances every night. The orchestra is located in a gallery, a sort of bridge, between the main dining-room and the Marble Hall, and is one floor below the fourth, on which my room is located, so that I have to listen to the damn' orchestra from five p.m. every afternoon until three the following morning with occasional interruptions. They probably have two or three shifts of orchestra men, for no one can keep up blowing a trombone or scraping a violin for ten hours straight. It's mostly jazz, and I am fed up on it. Am still waiting for a room on a lower floor at the other end of the hotel, to get away from this maddening music. The manager told me that the supper dances are crowded every night, so Moscow is not all in tears as some of our friends at home would have us believe.

The reason for adopting the five-day week, four days of work and the fifth for rest, was purely economic. The demand for products of all kinds for this rapidly growing nation has been so great and so insistent that the available

plant capacity proved entirely inadequate. To bring their plant capacity up to their demands would have taken time and required an expenditure of approximately two billion dollars, a sum of money which the government could not raise in addition to the vast expenditures for which commitments have already been made. It was found that the industrial plants of the country were idle 25% of the time, while the employees were resting from their work, and they estimated that if the plants could be operated during this period they would gain proportionally in productive capacity without additional expense.

Since traditions, customs, and religious observances do not influence the decisions of the relatively small group of men who rule the destinies of this vast country, they decided to make the experiment. Accordingly, a few months ago, a decree was issued ordering the five-day week and the continuous operation not only of industrial plants, but likewise of all administrative offices and general stores. Some confusion was at first inevitable, but the plan is apparently working smoothly, and the people, with their habitual docility, have adjusted themselves promptly to the new order of things, and the slight difficulties have been ironed out. The difficulty of holding committee meetings, of which they are especially fond, was particularly embarrassing. As one of the officials put it to me, "Four days of the week we are looking for the other fellows, and on the fifth they are looking for us." But the difficulty has been overcome by having men in key positions, whose presence at the same conferences is necessary, take the same day off, and by restricting important conferences to certain days.

SOCIALIST SOVIET REPUBLICS



OIL WELLS IN THE BIBI-EBAT REGION. BY FILLING IN THIS BAY OF THE CASPIAN SEA, OIL UNDER WATER HAS BEEN MADE ACCESSIBLE

At first thought it would appear that four days for work and a fifth for rest would reduce the total working days during the year. Actually it does not. Under the old régime there were 52 Sundays, some 30 church or civic holidays, and often a paid vacation of 12 working days, making a total of 94 days. Now there are 72 days of rest per year, five holidays, and 12 vacation days, a total of 89.

Although this plan has been in operation only a few months, an appreciable increase in production is already indicated. Whether the plan will also increase the production per man remains to be seen. Collateral advantages claimed for the five-day week are that places of amusement are not so crowded as formerly, that distribution of merchandise is more efficient and cheaper, and some also claim that it has decreased the consumption of liquor, since the days of rest are usually staggered among members of a family, thereby having a restraining effect.

Of course, there has been opposition from the clergy, because this plan tends to diminish the importance of Sunday as a day of prayer; but, on the other hand, churches are now conducting services every day. As soon as the government had decided on the five-day week, pamphlets were published and lectures broadcast over the radio explaining the economic advantages of the reform. An experiment of this kind would be practically impossible in any other country but Russia.

Moscow, February 1, 1930.

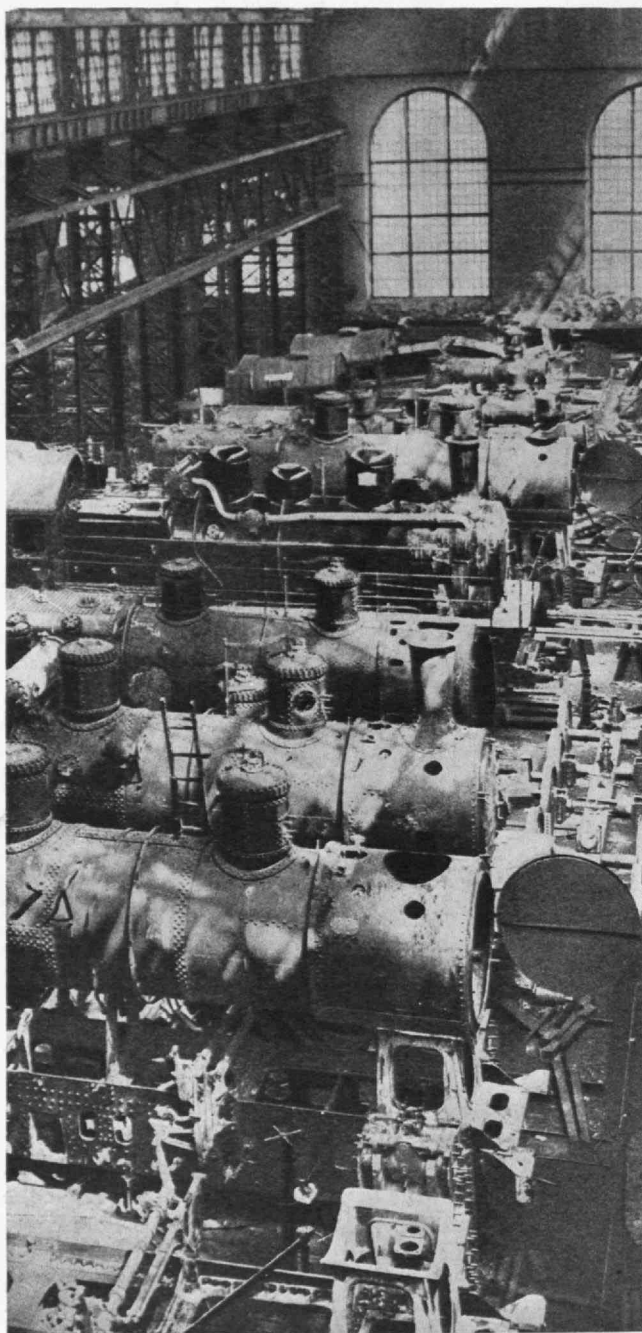
I bought three tickets for the opera yesterday, first row at four dollars each. H—— was detained and so I turned in one of my tickets; half a dozen people were ready to take

it off my hands. The lucky fellow was a young man of 23, in a dark flannel shirt, without coat or vest. He had just arrived from Yaroslavl, a celebrated city on the Volga, where he is an instructor at a college. It was his first trip to Moscow, and he had been sent by his college to obtain permission from the High Commission of Education to give correspondence courses to those who were unable to attend their institution in person. It must have been quite a sacrifice for him to pay four dollars for a seat at the opera; but a Russian would rather see a good play or listen to a fine opera than to eat or sleep.

The audience looked notably trimmer than last year. The women wore silk scarfs and other fineries, looked better groomed, and even the men looked as if they had tried to shave, occasionally one saw even a white collar. I shouldn't be surprised if in a few more years a man or woman would feel quite out of place at the opera when dressed in a sweater or flannel shirt and high boots. But, regardless of dress, the audience was certainly appreciative of good music and acting; the applause was loud, and the curtain calls persistent. I have already been at two operas and one ballet, and each time the house was crowded to capacity.

It is getting colder every day, about 15 degrees below zero at night, and not warmer than six below all day. If it keeps on, we shall soon be having as cold weather as we had while I was here last year. I hope not.

I was at the Grain Export headquarters this morning, and learned that Russia is now exporting grain again, and preparations are being made for increasing these exports. Russia is bound to become again the great grain exporting country it used to be; with this difference, however, that



LOCOMOTIVE ASSEMBLING SECTION OF THE KOLOMENSKY WORKS
OF THE "GOMZA TRUST" — A STATE COMBINE

hereafter no grain will be exported until ample provision has been made for the entire population, which was not the case in pre-revolutionary days. Of the abundant crops of last year 36 million poods have been set up as a reserve against emergencies, and this reserve is to be tapped only in the event of urgent national need, such as famine or war. This wise precautionary measure is the result of their sad experience during the famine of 1921, and of their close call last year. In spite of the severe drought over the entire agricultural belt of the south during the summer of 1928 their exportations of wheat last year indicated much larger amounts. It is easy to get misinformation here, and that may account in part for the inaccuracies published so often in our papers; but figures obtained from the men in responsible positions are invariably correct.

February 10, 1930

Yesterday I gave W—— the experience of a ride in a street car. By the time we reached our destination he was sure every button of his overcoat was off. Late in the forenoon or the afternoon it is almost impossible to find a taxi, and as it is too cold to walk for any length of time, a street car is the only alternative. The crowded condition of these trams reminds one of the subway at home. The windows are usually heavily frosted on the inside, and the people breathe on the window panes to thaw out a space large enough to enable them to keep their bearings, since conductors do not call out streets or stations. Here cars do not stop at every corner, but at definite stations several blocks apart.

Today I investigated the street back of the hotel, where there are long rows of shops and markets of all kinds. The queues of women outside these stores were long, as many as a hundred in some of them, waiting patiently to get into the government or co-operative shops to buy their food supplies. To the casual observer the waiting crowds might indicate a lack of food, and this conclusion is often drawn; but the reason is merely very bad management. I watched the crowds for a while, and then, to get a better idea of just how poor the service was, I went in to make a purchase. It took me just half an hour to buy a pound of caviar for two dollars. First I had to find out the cost of the caviar that I wanted; then I had to stand in line behind some thirty women to get a check for four rubles and 20 kopecks; then I had to stand in line at the counter where I could exchange my check for some caviar; but my can was overweight, and I needed another check, and had to go through the same performance again. The whole scheme is as inefficient, stupid, and slow as is possible to imagine; too much regulation and too little service for the number of customers. The Soviets have made excellent progress in their industries and are carrying out gigantic reforms in agriculture, but their system of retail distribution is simply disgraceful.

On top of this, the private trader is gradually and surely being crowded out. Shops that I visited a year ago have disappeared entirely. There could be no quarrel with this, if the government provided proper facilities in their own stores, but everywhere and always you see the same crowds, the same tedious waiting. Bargaining and exploitation have been done away with, but the inadequate methods of distribution are almost as great an evil. I suppose it will be corrected in time, and meanwhile only a patient and long suffering people like the Russians will endure it with a smile.

Their homes are crowded beyond our comprehension, because of a housing shortage; their shops are crowded; street cars and railway trains make our subway in rush hours seem leisurely and comfortable; their stations and narrow sidewalks are packed. They have just been trying to regulate pedestrian traffic, and in their effort to relieve the congestion they ordered the crowd to proceed in one direction on one side of the street and in the other direction on the opposite side. A large number of special police in civilian clothes, but with red bands on their arms, were stationed at every corner to direct the traffic and to prevent jaywalking, and large placards were posted everywhere appealing to the citizens not to crowd, and to

move in one direction only. After a three-days trial the experiment was given up; it is hard to make a man walk where he doesn't want to go.

When they get more automobiles they will need a light signal system, but that is some time off yet. Plans have been worked out for a Greater Moscow, opening up the surrounding country and widening the streets; but that will have to wait for more important problems.

February 14, 1930

At present there is quite a stir over the news that Russian engineers, of whom there are probably 100,000, are to be invited to join the Communist party. Heretofore, the powers that be have rather frowned on having intellectuals and professional men in the "Proletarian" Party, in which a very rigid discipline is maintained, and so there is much speculation concerning the reason for this move. The most probable explanation is that the Party now feels so thoroughly entrenched that it can with safety admit to its ranks a group of men who during recent years have played an important rôle in the industrial regeneration of the country, but who have remained politically aloof. To admit them at present would obviously be good politics, and would strengthen the organization as well as remove a potential nucleus of organized opposition. Whatever the motive, it is an interesting political development that may have far-reaching consequences. It may eventually mean a more conservative trend, and the complete abandonment of the policy, which so far has proven a failure, of proselytizing the world to Communism. It will be interesting to see how many accept the invitation.

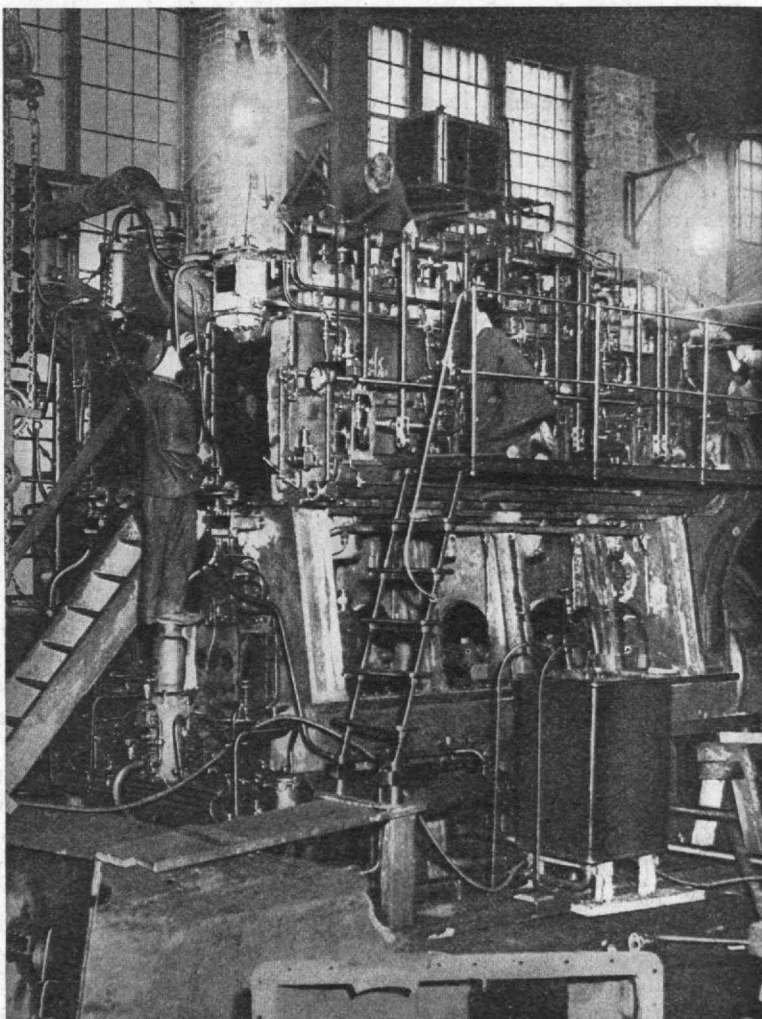
Engineers, for whom there is a great demand that will continue for some time to come, occupy a preferential position in the proletarian government, and command compensation commensurate with their services. If they join the Party, they will not only be subject to party discipline, but their compensation will be fixed at the maximum allowed a communist, which I understand has been increased to 300 rubles a month from the 225 of last year. Many engineers are now getting as high as 500 to 1,000 rubles a month. It will, therefore, be necessary to adjust this difference, if the Party hopes to attract engineers and members of other professions.

Another objection to party membership is that a member is subject to the orders of the Party Council, and must go wherever he may be sent, and where in the judgment of the Party he is needed most. It is like joining the army and being at the beck and call of Headquarters without power of protest. So far it has been the policy of the Party to shift its key men from place to place. Often men are taken from the ranks and put into executive positions and after a few years of such service put back into the ranks again. We started negotiations here with Mr. V—, who was in charge of the railway repair shops. Almost without notice he was transferred to the interior on some important railroad job, and a new man took his place, and we started all over

again. This imposes hardships, and may temporarily affect the continuity of a policy, but on the other hand, it reduces the probability of a man's becoming stale on the job, a danger that is particularly great here where they are suffering from the worst case of bureaucracy that I know of. Perhaps this is one way of breaking up the evil.

February 26, 1930

One of the unfortunate effects of their long years of struggle is that the leaders of the Russian Dictatorship have lost faith in everyone except the 100% communist. They believe that all who are not with them are against them, and are not to be trusted. Apparently they will not admit that there can be honest difference of opinion, or that people can disagree with them and yet follow with interest and sympathy their efforts to work out their own salvation in their own way. They themselves are passing through a materialistic phase of development, and lose sight of the fact that in Western Europe and in America the motivating force of action is more often based upon high principles and accepted standards of morality than on material considerations alone. This is very evident in business discussions. Paradoxical as it may seem, many of the leaders, while subjecting themselves to untold sacrifices for an ideal, scoff when an outsider would place morality and character (*Continued on page 44*)



ASSEMBLING A 400-HORSEPOWER DIESEL AT KOLOMENSKY

SAVING COAL BY SCIENCE

The International Agreement on the Properties of Steam Reached at the Second World Power Conference, Berlin, 1930

BY FREDERICK G. KEYES

THE SCIENCE of the generation of steam and its subsequent use to produce power would have appeared a dozen years ago to have reached a stage where only minor and insignificant improvements were needed or desirable. The designers of steam-operated prime movers and steam-generating apparatus have not been content, however, to recognize any such stage. On the contrary, they have quite boldly explored the possibilities of design which would increase the efficiency of steam power generation. Thus in ten years the coal per kilowatt hour (k.w.h.) has been reduced in central stations from about 3.2 lbs. in 1919 to 1.84 lbs. in 1928, and 1.65 lbs. in 1929. When it is recalled that 46,000,000 tons of coal were used in central stations in 1929, the enormous economic importance of what has happened is apparent. What are the factors which have entered to bring about such a striking result?

The answer, as in other matters, is not entirely simple, but the surprising progress realized is to a considerable degree dependent on, and connected with, a more accurate and extensive knowledge of the physical properties of the working fluid, steam. The coöperative effort between engineers and scientific men, which has provided the required additional knowledge of steam properties, forms for the engineer one of the most interesting examples of the fundamental importance of pure science to the progress of applied science.

World Power Conference

THE recent "Steam Properties" conference in Berlin on the occasion of the Second World Power Conference completed the review and discussion of new experimental data which was begun at the London Steam Conference in 1929. The World Power Conference itself has been already well reported in two articles in *Power*, to be found in the June 24 and July 1 issues. This latter conference, of great importance to the engineering profession, convened in Berlin on June 16 for its second plenary session and was attended by more than 4,000. Without doubt it was the greatest engineering gathering of world-wide scope ever held. The meeting brought together the leaders in science and engineering as well as important personages in education, industry, finance, and government.

The first plenary session of the World Power Conference was held in London in 1924 and occupied itself mainly with discussions of machines and engineering developments. The recent second Conference took as its central theme economics as bearing on the problems of distribution and utilization of power. On these subjects some 400 papers were contributed by the engineers and economists representing 47 nations. Of further general

interest is the fact that four days before the general session convened Mr. O. C. Merrill, Chairman of the American Committee, invited the Conference to hold its third plenary meeting in the United States in 1936 and the invitation was accepted.

Sunday, June 15, there took place a special meeting at which Mr. Oskar von Mueller was inaugurated as new President of the Conference succeeding Lord Derby. This was followed in the evening by a reception at the Reichstag Building where the delegates were welcomed by Mr. von Kardoff, Vice-President of the Reichstag. Monday morning, June 16, the first general session took place in a setting made brilliant by the flags of all nations, and the meeting opened by an address by Mr. von Mueller. The Reich Chancellor, Mr. Bruening, read a message from President von Hindenberg.

The afternoon session was opened by an address by Professor Albert Einstein, who gave a very elegant exposition of his theory of space and time. Wednesday afternoon during the American Hour, the American Ambassador created a mild furor by referring to the price spread between bus-bar cost of electricity and the retail cost in America. One statement of this address declared, "I know of no other manufacturing industry where the sales price of a product to the great mass of consumers is fifteen times the actual cost of producing the article sold. My purpose is sharply to define a weakness that calls for the keenest thought in your deliberations." Needless to say, this statement aroused vigorous protest and discussion.

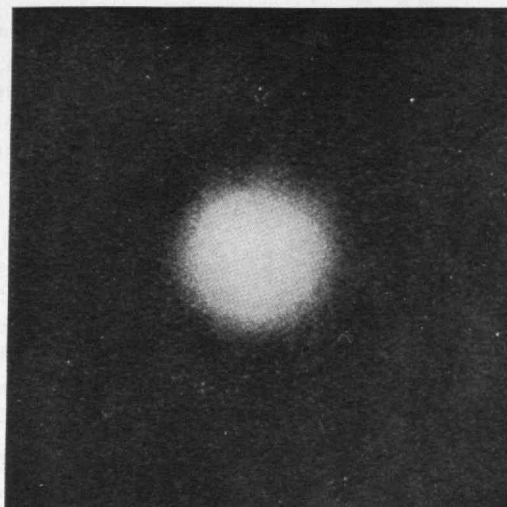
The "Steam" Conference

IT IS perhaps well to recall that the International Conference on Steam Properties is the outcome of a program of research initialed at a meeting held in Cambridge on June 23, 1921. There gathered on this day a group of scientists and engineers who discussed in detail the limitations of machine design imposed by the lack of sufficiently accurate and extensive steam data. There was accordingly laid out a comprehensive program of research to be sponsored by the American Society of Mechanical Engineers. Funds were to be raised by a sub-committee of the A. S. M. E. Research Committee.

Briefly the program of steam research decided upon was to be carried out in three parts as follows:

1. Joule-Thomson cooling effect in charge of Dr. Harvey N. Davis, at the Harvard Engineering School.
2. The Specific Heat of Water, Heat of Evaporation and Mechanical Equivalent of Heat, in charge of Dr. Nathan S. Osborn at the U. S. Bureau of Standards.
3. The Pressure-Volume-Temperature Relations to the highest possible temperatures in charge of Professor Frederick G. Keyes at Technology. (*Concluded on page 54*)

"APPEARANCE" OF A
HELIUM ATOM



BASED ON HEISEN-
BERG'S THEORY
(LANGER)

LOOKING INSIDE THE ATOM

X-ray Scattering and the Structure of Atoms

By ARTHUR H. COMPTON

SEVERAL weeks ago I noticed a beautiful ring, or corona, as the meteorologist would say, around the moon. Half an hour later the corona was visibly smaller in diameter, and it was no surprise when a few hours later rain began to fall.

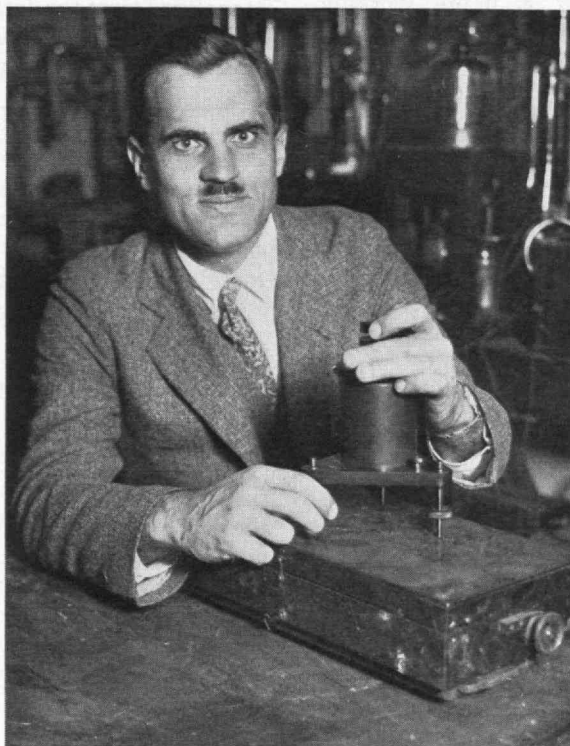
The interpretation of such coronas, as due to the diffraction of the moonlight by droplets of water suspended in the air, is well known. The larger the droplet the smaller the angle of diffraction necessary for the appropriate phase difference between the rays coming from the two sides of the drop. So by observing the diameter of the ring, we can estimate the size of the water drops which cause it. A shrinking corona means a growing drop, and hence probable rain.

In a very similar manner it is possible to find the size of molecules and atoms in a gas, by observing the diffraction halos produced when they are traversed by a beam of x-rays. For many years it has been possible by this method to make rough estimates of the sizes of the atoms; but only very recently has the theory of the process become well understood, and the experimental technique become sufficiently developed to give us precise information regarding electron distributions.

When we review the many atomic theories that have been proposed and discarded, it may perhaps appear too bold to say that the particular theory now in vogue has any finality. One by one the vortex ring atom of Kelvin, the positively charged jelly of Thomson, the minute solar systems of Rutherford, Bohr and Sommerfeld, as well as the tiny atoms of Crehore, the ring electron atoms of Parson, and the cubic atom of Lewis and Langmuir have given way to more promising successors. We replace even Schrödinger's diffuse cloud of negative electricity by a probability cloud of electrons after the manner of Heisenberg. It now appears however that the only one of these many proposals which can account for the observed x-ray diffraction halos is that of Heisenberg.

History of the Diffraction of X-rays by Atoms

IT was as early as 1911 that experiments by Owen¹ and Crowther² revealed a strong "excess" scattering of x-rays at small angles. D. L. Webster³ seems to have been the first to ascribe this phenomenon to interference between the rays scattered by electrons closely grouped together. This idea was developed



Wide World

THE AUTHOR AT HIS X-RAY SPECTROMETER

extensively by C. G. Darwin⁴ in his theory of the diffraction of x-rays by crystals, in order to account for the relatively high intensity of the low orders of x-ray reflection. A year or two later Debye⁵ developed in similar detail the theory of the diffraction of x-rays by amorphous materials, in which each atom could be considered to act independently of the others.

Thus there were presented two methods for studying the diffraction of x-rays. The first is by crystals, in which after taking into account the interference occurring between the various atoms in the space lattice there emerges the diffraction pattern due to the atom itself. The second is a study of the scattering of x-rays by amorphous substances, in which we are really limited to the scattering by gases, since only in this case can we neglect the effect of interference by neighboring atoms.

Intensity of Reflection of X-rays by Crystals

DUE in part to the very low intensity of the x-rays scattered from gases, and in part to the rapid development of the study of x-ray reflection by crystals in the hands of the Braggs and others, it was the crystalline diffraction problem which first received extensive experimental study. In these early studies, before the war, Sir William Bragg and I working independently⁶ were able to make sufficiently accurate estimates of electron distances within atoms to rule out as unsatisfactory Crehore's atomic theory and Bohr's first theory of the heavier atoms. An unforeseen difficulty appeared,⁷ however, in the form of the rapid extinction of the x-rays as they enter a crystal at the angle of maximum reflection. It was impossible to calculate this extinction for a real crystal, and the early attempts to measure it were unsuccessful.

Following the war, however, W. L. Bragg, working with James and Bosanquet,⁸ developed an approximate method of correcting for this extinction. Sir William Bragg⁹ went one step further, when he showed that it was feasible to make ionization measurements of the x-rays diffracted by a crystal powder, in which the extinction was negligible. This powder method has since been applied extensively by investigators at Chicago and Harvard.

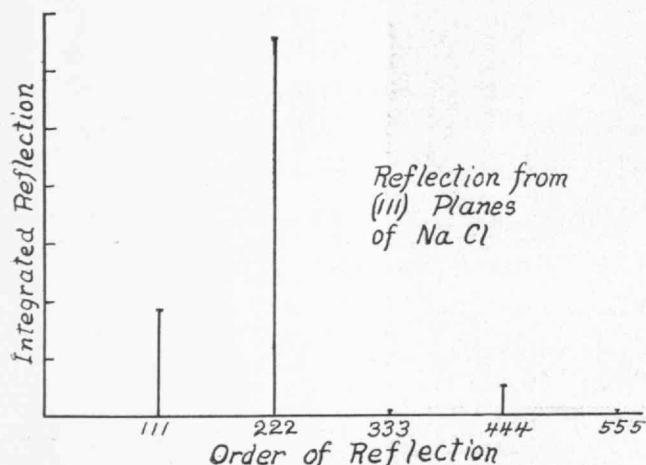


FIGURE 1

Intensities of reflection from the (111) planes of rock salt

A great step in advance was made when in 1925 Duane¹⁰ showed that density of electron distribution could be expressed as a Fourier series, each term of which was determined by the intensity of the corresponding order of x-ray reflection. With the help of this theorem it is now possible to translate x-ray intensity measurements directly into electron distributions.

Consider for example the reflections from the (111) planes of rock salt, as shown in Figure 1. Using Duane's formulas, each of these intensities determines the amplitude of the corresponding harmonic in the Fourier series representing the electron distribution, as shown in Figure 2.

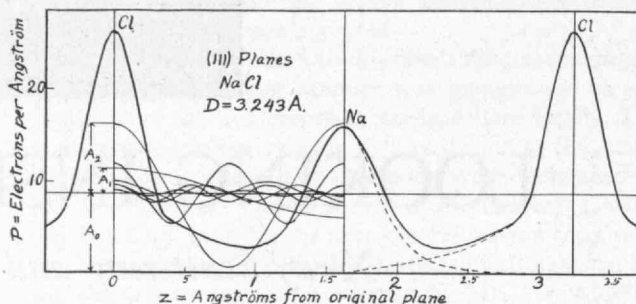


FIGURE 2

Density of electron distribution in layers parallel to the (111) planes of rock salt

This method of analysis shows directly the alternate layers of sodium and chlorine, as well as the diffuseness of the atomic layers themselves.

An extension of this analysis¹¹ enables us to use the same data to write a Fourier series representing the radial distribution of the electrons in the atoms of a crystal. Such a curve representing the sodium atom in rock salt, as analyzed from the data of Bragg, James and Bosanquet, is shown in Figure 3. Similar curves have been obtained for a large number of the lighter atoms.

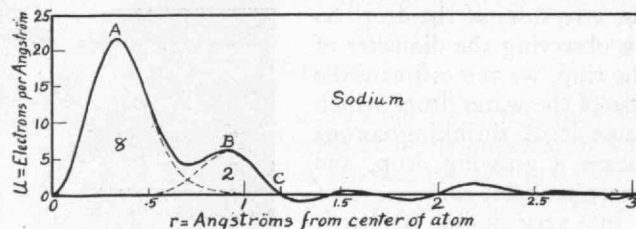


FIGURE 3

Radial distribution of electrons in the sodium ion of rock salt

There are several points of interest in curves such as this. In the first place it will be seen that the diameter of the atom, about $2A$, is of the same order of magnitude as the distance between atomic centers. This is in accord with the dimensions as ascribed by the Bohr-Sommerfeld and the new quantum mechanics theories of the atom. It will be noted, however, that the distribution found in these experiments is continuous, and not divided into sharply defined shells as was predicted by Bohr's theory. In fact, as early as 1922 Bragg, James, and Bosanquet concluded from these studies that it was doubtful whether it was possible to account satisfactorily for the observed intensities by any other than a continuous dis-

tribution of the electrons. This was a bold statement in the days when Bohr's theory was considered to be "the law and the prophets".

There is however some apparent diffuseness resulting from the thermal agitation of the atoms within the crystal lattice. Unfortunately we have no means of knowing the exact amplitude of this thermal motion, and until we do so it is impossible to interpret curves of the type of Figure 3 in terms of electron distributions around a stationary nucleus. The difficulty is that of knowing whether there is any motion remaining at the absolute zero of temperature, which if it exists must affect our interpretation very considerably.

Scattering of X-rays by Gases

TURNING now to the diffraction of x-rays by gases, it is clear that the thermal motion is of no consequence. For in this case each atom is scattering independently of the others, since the phase differences between the different atoms is random. Also there is no extinction problem to bother us. From measurements of the diffraction of x-rays by gases it should thus be possible to get more complete and reliable information regarding electron distributions than from the diffraction by crystals.

Here however there are also difficulties. There is the obvious one of intensity; for the work must be done with homogeneous x-rays, and homogeneous x-rays are weak. Moreover gases scatter only feebly, and at best scattered x-rays are not strong. Nevertheless, thanks to the gradual development of sources of x-rays and of methods of measurement, this experimental difficulty has to a large extent been overcome.

A more serious obstacle arose when it was found that the scattered x-rays were not of the same wave-length as the primary rays. This was a departure of fundamental importance from the diffraction theory that was being used to explain the phenomenon. For according to this theory the effect sought for was the interference between rays scattered by neighboring electrons, whereas the interpretation of the change of wave-length of the scattered x-rays was based on the assumption that an x-ray was scattered by only one electron at a time. This difficulty does not appear in connection with diffraction by crystals, for in this case the diffracted and the incident ray are of the same wave-length. It was necessary therefore to postpone the interpretation of these scattering experiments until the diffraction theory was extended to include the phenomenon of the change of wave-length. During the past two or three years this has been accomplished by Wentzel and Waller. Their results indicate that to a close approximation the calculations of the classical diffraction theory are valid, and an approximate correction term can be simply applied to make the diffraction theory still more reliable.

Using such a corrected formula, mathematical analysis again makes possible the expression of the electron distribution in terms of the observed intensity of the scattered x-rays. In this case the formula obtained¹² is the Fourier integral

$$u(r) = r \int_0^{\infty} B \sin(\pi r x) dx \quad (2)$$

where $x = 4/\lambda \sin \varphi/2$, and B is a quantity determined by the intensity of the rays scattered for any particular value of x .

Thus in the case of helium, the data of Figure 4 show the intensities of the scattered rays as measured by Barrett.¹³ When put through the Fourier mill, from these

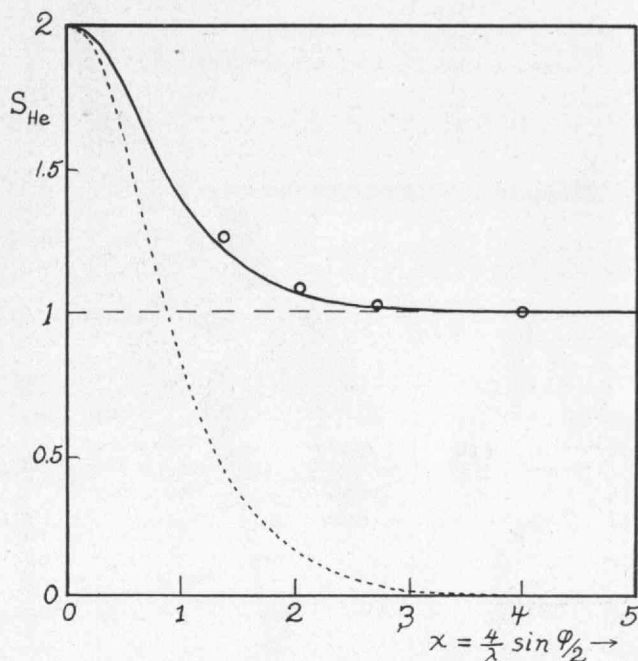


FIGURE 4

Intensity of x-rays scattered by helium for different values of x . Data from Barrett's experiments; solid line from Heisenberg atom; dotted line from Schrödinger atom

data is ground out the electron distribution in the helium atom shown by the solid curve of Figure 5. We note a maximum of electron density at about 0.32Å, which

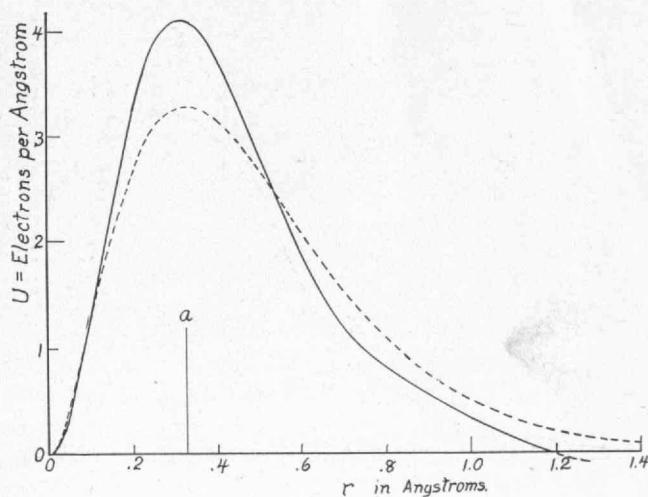


FIGURE 5

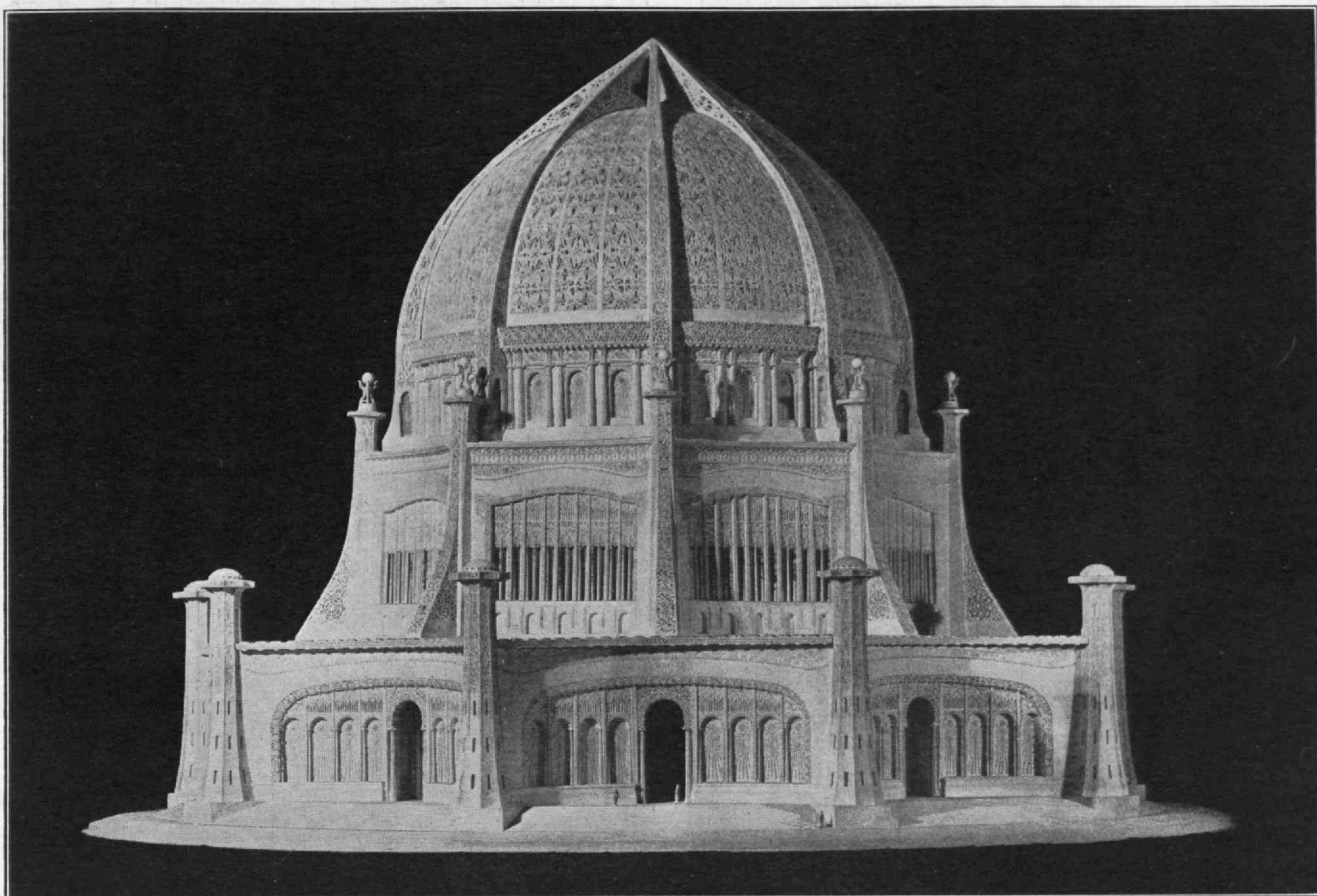
Radial distribution of electrons in atom of helium. Solid curve calculated from Barrett's experiments; broken line, Heisenberg-Schrödinger theory

is very near the radius of the electron orbits of helium calculated on Bohr's theory. The distribution is however definitely diffuse, instead of being strongly concentrated
(Continued on page 50)



Photograph of Irving Trust Company Building, by Ewing Galloway

THE CONSCIOUS STONE TO BEAUTY GREW"



ARCHITECT'S MODEL OF BAHÁ'Í TEMPLE

A TEMPLE OF LIGHT

"The First New Idea in Architecture Since the Thirteenth Century"

BY ALLEN B. MCDANIEL

ERECTION of the long projected Baha'i Temple, unique in its architectural and engineering design, is to be begun this autumn in Wilmette, Ill. Since so much about the Temple is structurally new and arresting, it seems appropriate to present a description of it, especially those features of interest to architects and engineers.

Architecturally, the Temple is a unique, original form — "the first new idea in architecture since the Thirteenth Century" according to Mr. H. Van Buren Magonigle, architect of New York City. Mr. Magonigle has given the following description of the Temple:

"Mr. Bourgeois has conceived a Temple of Light in which structure as usually understood is to be concealed, visible support eliminated as far as possible, and the whole fabric to take on the airy

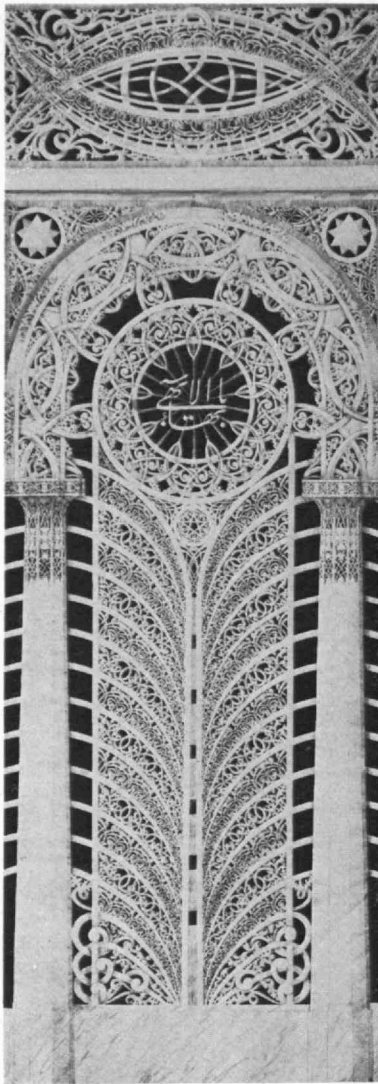
substance of a dream; it is a lacy envelope enshrining an idea, the idea of Light, a shelter of cobweb interposed between earth and sky, struck through and through with Light — Light which shall partly consume the forms and make it a thing of faery."

Structurally, the Temple is remarkable in that it will comprise a steel, reinforced concrete and glass framework, on which will be placed the highly ornamental surface material. It is a nonagon, or nine-sided structure; each side having the form of a circular arc, with a large doorway in the center; and the whole edifice giving the appearance of extending welcoming arms to the approaching people from every direction. Pylons 45 feet in height stand like sentinels at the corners of the first story. Above the gallery, the clerestory and the dome



Chicago Aerial Survey Co.

SITE OF TEMPLE IN WILMETTE, ILL. THE CIRCULAR FOUNDATION IS VISIBLE



are also nine-sided but with the ribs rising from midway of the first story sides.

To get a mental picture of the Temple, imagine a lofty cylindrical room topped with a hemispherical dome of 75 feet interior diameter and extending to a height of 135 feet in the center, formed of glass supported in a metal framework. The glass roof and sides protect the interior of the building from the weather. When completed, the glass will be concealed within the exterior and interior surface ornamental material, which will act as perforated screens through which the light will pass.

The weight of the structure and the dome is carried principally at nine points equally distant from the center,

and the superstructure is supported on a circular platform or foundation, 202 feet in diameter at the ground surface, and rising by 18 concentric steps to the main floor of the Temple, which is 153 feet in diameter. See illustrations on preceding page.

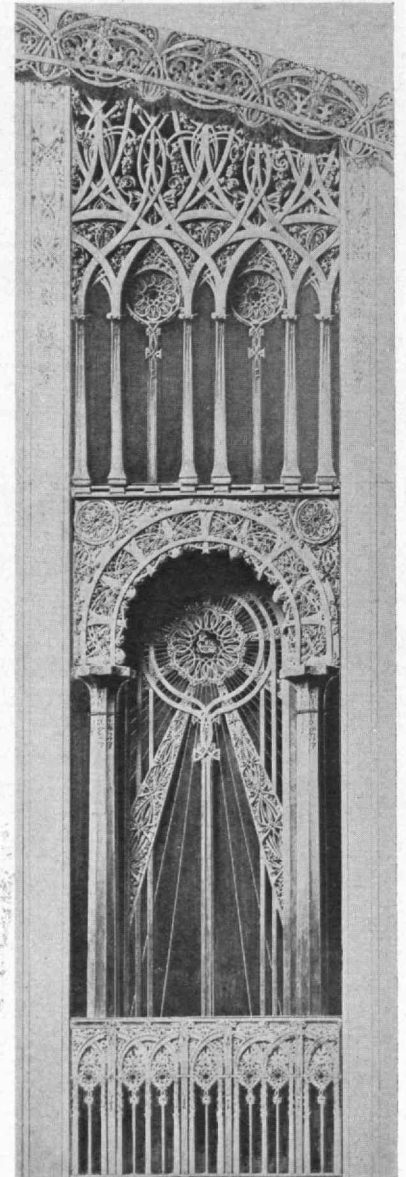
Entering any one of the nine doors, one will pass through a hallway into the central circular room or auditorium. Out of this main hall open radially (and separated by the hallways) nine smaller rooms, comparable to chapels in a cathedral. Looking upward toward the dome, will be seen a gallery 36 feet above the main floor, and above this a second (or singers') gallery 61 feet above the floor level. Above the second gallery is a 19 foot clerestory from which springs the dome. The galleries project 10 feet into the central hall, giving the latter a clear interior diameter of 75 feet. The dome will be in three parts; the outer dome of perforated concrete or metal, the concealed wire glass weather-proof dome, and the inner dome of perforated material, decorative in character. The central domed hall will have an area of about 4,000 square feet and seat about 700 people. The nine small rooms opening out of the main hall are about 20 feet wide, 24 feet deep and with ceilings 33 feet high. These auxiliary rooms will seat about 100 persons each.

TO interpret further its architectural features let me present additional comments from an article in the *Architectural Record* of June, 1920:

"The first story in its simplicity of line suggests the Greek and Egyptian temples; while the treatment of the doors and windows is Romanesque in form, and both Gothic and Arabic in the intricacy and beauty of ornamentation. The second story is Renaissance in line and Gothic in the interlaced arches of its openings. The third is restful, quiet and Renaissance in treatment. Above it rises a lovely dome, suggestive of Byzantine forms; but above the closed top rise other beams of the dome itself like hands clasped in prayer, so that the dome gives the feeling of ascension and aspiration found previously in the Gothic towers alone.

"In the geometric forms of the ornamentation covering the columns and surrounding windows and doors of the temple, one deciphers all the religious symbols of the world. Here are the swastika cross, the circle, the triangle, the double triangle or six pointed star (or Solomon's seal, the magic symbol of necromancers of old); but more than this the noble symbol of the spiritual Orb, or Sun behind the Saviour of mankind; the five pointed star, representing the man saviour—Christ or Buddha or Mohammed; the Greek Cross, the Roman or Christian Cross; and, supreme above all, the wonderful nine pointed star, figured in the structure of the temple itself, and appearing again and again in its ornamentation, as significant of the Spiritual Glory in the world today.

"The nine pointed star reappears in the formation of the windows and doors, which are all topped by this magnificent allegory of spiritual glory, from which extend gilded rays covering the lower surfaces, and illustrating, in this
(Continued on page 46)



ON THIS PAGE ARE SHOWN DESIGNS
FOR TWO PANELS



The Plastic Age

ABOVE the economic horizon a new industry, the manufacture of plastics, is climbing into prominence. Dr. Wilson Compton, Executive Secretary of the National Lumber Manufacturers Association, declares that the aggregate value of plastic products in the United States is already equivalent to one-tenth that of the products of the lumber and wood-working industries combined, and the editors of *Plastics* assert that the volume of the plastics business has practically doubled every year, bringing its total this year up to one-quarter of a billion dollars.

What are plastics and how are they used? The material of which phonograph records are made is a commonly known product that falls into the plastic classification and, of course, there is celluloid. The first is known chemically as a shellac base plastic and the second as a cellulose nitrate plastic, but both of these are old stories. It is the discovery and spectacular development of the phenol formaldehyde resins such as Bakelite that has created an industry that approaches the magnitude of the lumber business and bids fair to challenge the supremacy of many others.

One large firm, for example, is offering for the first time "Beetle" ware, a type of tableware that is thin, light, and colorful, that will not scratch or chip or break under ordinary usage. Surely a boon to hotels and housewives!

This is only one of a hundred varieties of new plastics: there are others that are moulded or pressed into buttons, radio dials, unbreakable storage battery jars, handles, wall panelling, and table tops. Some of the plastics can take the most delicate and exquisite color shadings; others can be made translucent or opaque. They can be extruded in the form of sheets or rods, softened by immersion in oil and then moulded into simple forms. Some of them are so hard they have to be machined.

Modern interior decorators are beginning to use the different forms for all manner of decorative purposes. Lustrous sheets of Bakelite in subtle hues are employed

for walls. Lights, screened by bars of amber-hued casein plastic rods, give new effects in illumination. Furniture of chromium metal smartly set off by black Bakelite trimmings is designed in many forms.

Plastic materials may be divided into six groups, according to their method of formation:

I. *Natural gum, wax, shellac, and asphalt compounds.* Manufactured with or without drying oils in combination with inert fillers such as wood flour, asbestos, clays. Examples: PHONOGRAPH RECORDS, BATTERY JARS.

II. *Casein Plastics.* Casein, a by-product of the milk industry, when treated with formaldehyde forms a horn-like substance, capable of taking an excellent polish, of being softened by oil and moulded. It is non-inflammable and can be made with beautifully mottled effects.

Examples: PENCILS, JEWELRY, TRANSLUCENT MATERIALS.

III. *Albumen Plastics.* Resemble the casein products, although more easily moulded and dyed.

IV. *Cellulose Base Plastics.* Derived from nitro-cellulose or pyroxylin. Non-heat resistant, flexible, used as a sandwich material between layers of glass in the manufacture of safety glass.

Examples: TOILET ARTICLES, PHOTOGRAPHIC FILMS, AUTOMOBILE CURTAINS.

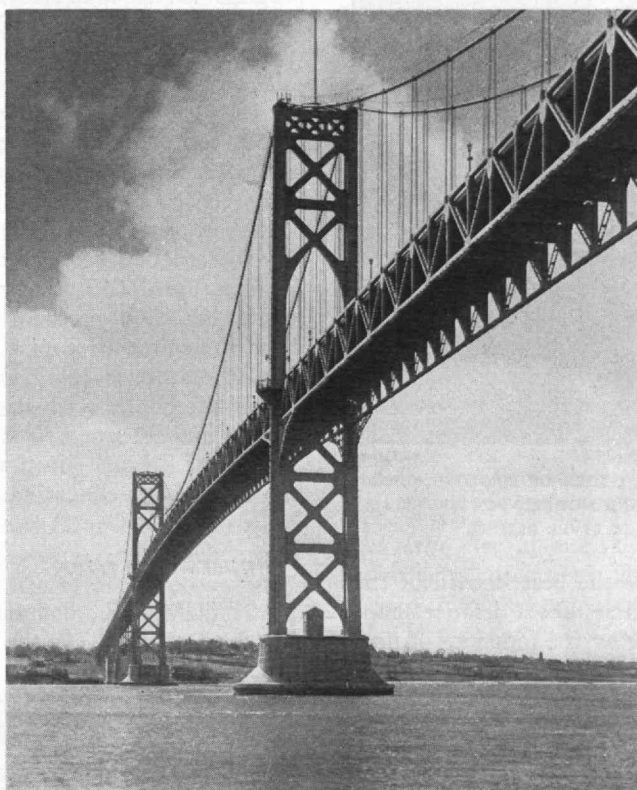
V. *Cellulose Acetate Plastics.* Closely related to IV, except that they are non-inflammable. Because of their lack of plasticity, used largely in sheet form.

Examples: SAFETY FILMS, CELLOPHANE.

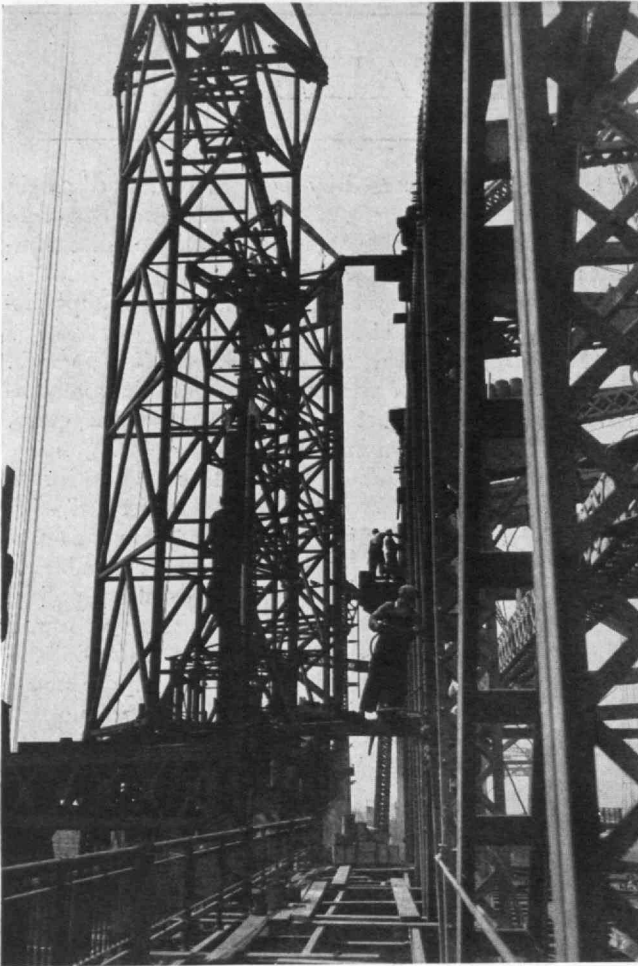
VI. *Synthetic Resins.* The most important are the phenolic resins such as Bakelite and the newer materials of the urea-formaldehyde type (Beetle, for example). Extremely plastic in the formative period, these products have great strength, and high insulating qualities.

Examples: ELECTRICAL INSULATORS, RADIO DIALS.

In the *Industrial Bulletin* of Arthur D. Little, Inc., the field covered by the term "plasters" is delimited by the statement "the longer known plastic materials are not generally included when speaking of the plastics industry. The important materials . . . are those natural and synthetic resins and cellulose ethers and esters (cellulose



THE MOUNT HOPE BRIDGE OVER NARRAGANSETT BAY, BETWEEN PROVIDENCE AND NEWPORT, R. I., THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION HAS CHOSEN IT AS THE MOST BEAUTIFUL BRIDGE COMPLETED IN 1929



Galloway

IN THE MIDDLE AGES A RELIGIOUS ORDER OF PONTIFFS BUILT AND MAINTAINED BRIDGES. HERE ARE MODERN PONTIFFS AT WORK ON THE HACKENSACK RIVER BRIDGE

nitrate and cellulose acetate are the best known of the ethers) which may be caused to assume a definite shape either by a chemical reaction or by the influence of heat and pressure in a metal mould."

While this definition of the plastics does not include hard rubber, that substance is, of course, used in much the same manner as are many of the plastics proper. It is interesting to note that Edward W. Washburn, '05, the Chief Chemist of the Bureau of Standards has lately produced crystalline rubber from petroleum and, while chemists at the Bureau have not yet passed a final opinion on its value, they are hopeful that it will lead to a new and commercially practical source of rubber.

Architectural Appreciation

JAMES RUSSELL LOWELL once declared that the Old South Meeting House in Boston was devoid of artistic or aesthetic interest, worthy of preservation only because of its historical associations. It was not comparable, he said, with the hall within which he was speaking — Memorial Hall at Harvard!

This is a fair sample of the architectural taste that is sometimes to be found in America. Of course the Old South Meeting House is incomparably finer than that crude Victorian pile within which Lowell spoke at

Harvard, but Lowell was not alone among the intellectuals of his day who, through lack of taste, would have adjudged Memorial Hall as beautiful.

Hawthorne wrote of Salem in 1849; "So far as the physical aspect is concerned, with its flat, unvaried surface, covered chiefly with wooden houses, few or none of which pretend to architectural beauty; its regularity, which is neither picturesque nor quaint, but only tame . . . it would be quite as reasonable to form a sentimental attachment to a disarranged chequer board." This sounds strange today when Salem is an architectural mecca and Samuel McIntire's name has been enshrined among the great.

Cultivation of America's architectural taste and discrimination, however, is not considered hopeless by the American Institute of Architects. In fact, the committee on education of that body seems to be making admirable progress as its chairman, Professor William Emerson, Head of Technology's Department of Architecture, indicates in his annual report.

The committee, aided by the Carnegie Corporation, has been sponsoring summer courses at Harvard and the University of Oregon designed to "reinforce the gospel of an understanding of the arts in the everyday life of every citizen." Traveling lecturers have also been employed by the committee, most important of whom is C. Howard Walker, Lecturer on the Philosophy of Architecture at Technology, and who, Professor Emerson reports "continues to be our most aggressive advocate." With the coöperation of the American Library Association, literature is being written and distributed to acquaint the public with the significance of the fine arts. It was unfortunate that the arbiters of the Victorian "Reign of Terror" lived too early to come under the influence of this educational program.

Planners of Cities

LAST SUMMER, in mourning the passing of George L. Burdett Ford, '00, the *New York Times* paid tribute to his emi-

nence in the profession of town and city planners whose members "must build on things as they are, working chiefly with such tools as they are able to fashion out of goodwill, guidance and coöperation." For Mr. Ford was general director of the Regional Plan for New York and dealt with



Walter H. Kilham, Jr.

BAUHAUS INSTITUTE, DESSAU, GERMANY,
DESIGNED BY WALTER GROPIUS

the municipal rearrangements of a thickly populated area a tenth larger than the State of Connecticut. Besides, he had been city planner for 18 other American cities, zoning consultant for 50, and adviser to the French government on the rebuilding of war-devastated Rheims and Soissons.

New York's effort to recapture some of its lost opportunities for orderly growth is by far the most stupendous undertaking of the kind ever recorded. Yet town planning is not a new science and there are considerably more ancient examples than turreted Babylon, long cited as the earliest planned city. Nor is zoning of recent origin for in Roman law there were restrictions on the height of tenements and the locations of brickfields and cemeteries.

But planning in the grand manner came about in Italy during the Renaissance and spread to France. The accomplishments of André Le Nôtre under Louis XIV at Paris and Versailles and Sir Christopher Wren's uncarried-out designs for the rebuilding of London after the Great Fire of 1666 had much subsequent influence. One also recalls among great planners Inigo Jones, Penn and his scheme for Philadelphia in 1682, Bull and his plan of Savannah, Ga., Peter the Great with his lay-out for his capital on the Neva in 1703, Pierre Charles L'Enfant designing Washington in 1791 on such "a scale as to leave room for the aggrandizement and embellishment which the increase of wealth of the nation will permit it to pursue at any period, however remote."

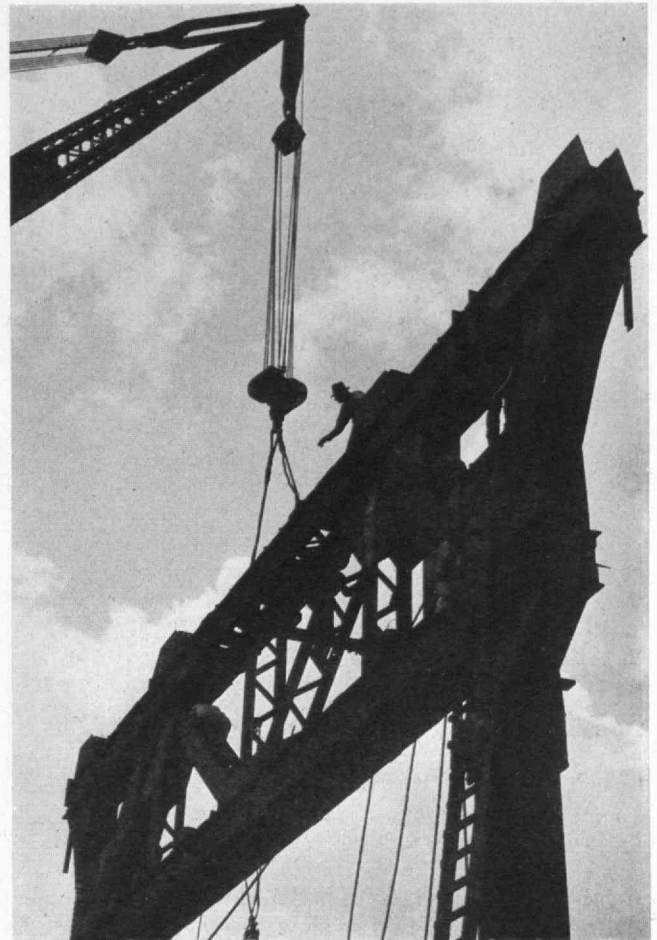
None of these, however, had to contend with the problems confronting Mr. Ford, and the city planners of this day and generation do not possess the arbitrary authority of Baron Georges Haussman who laid out the Bois de Boulogne but is principally remembered by the boulevards he slashed through Paris during the heyday of the last Napoleon. Paris, incidentally, is now spending \$40,000,000 in a traffic relief program of new highroads, new bridges, underpasses, overpasses, and new boulevards. The Baron's grandiosity evidently failed to provide for today's urban concentration due to high buildings and automobiles, so Paris must modernize itself.



Walter H. Kilham, Jr.

GROPIUS IS ONE OF GERMANY'S FOREMOST EXPONENTS OF MODERNISM. SEE PICTURE OPPOSITE

To automobiles, however, is probably to be credited the fact that tendencies for good city planning are now better than they have been for several generations because, as the *Times* phrases it: "With the coming of the motor age the man in the street for the first time stopped to listen to what



Roberts

BUILDING THE DELAWARE RIVER BRIDGE AT PHILADELPHIA. WELL-INFORMED PONTISTS WILL RECALL THAT IT IS ONE OF AMERICA'S LONGEST AND MOST BEAUTIFUL SUSPENSIONS

they (the city planners) had to say . . . He found his movements hampered, his goods delayed, his time wasted. He lived under constant pressure like a deep-sea fish. His community found its budget mounting, its leading citizens moving into the suburbs where their children could breathe, its industries threatening to go where they would have more room and lower taxes."

Also a change in the city planner's conception of the city to that of a *machine à habiter*, to employ the phrase of Le Corbusier, whose "Voisin" proposal for the center of Paris was described in an article in *The Review* last April, has made for a better appreciation by the man in the street. Architectural dignity with spacious avenues and plazas and handsome arches and monuments remain fundamental objectives, of course. But in the "city beautiful" of today the abatement of smokes and smells and noises, set-back buildings to let in sunlight, railroad electrification, the easy flow of street traffic command attention as do utilitarian items of longer standing like water supply, sanitation, and fire protection.

The Difficulties of Tea Tasting: Or the Possibility of a Smokeless Fuel

ONE need scarcely insist upon the depressing effects of smoke and gloom in cities, for they were officially recognized as early as the reign of Queen Elizabeth whose



International

ENGLAND'S CURIOUS AND SECRETLY DESIGNED HUSH-HUSH
LOCOMOTIVE PASSING OVER THE FIRTH OF FORTH BRIDGE

royal proclamation forbade burning coal in London during periods when Parliament was sitting. Besides damaging health, property, and vegetation, the smoke nuisance necessitates enlarged outlays for maintaining buildings and other structures, for washing, cleaning, and artificial lighting.

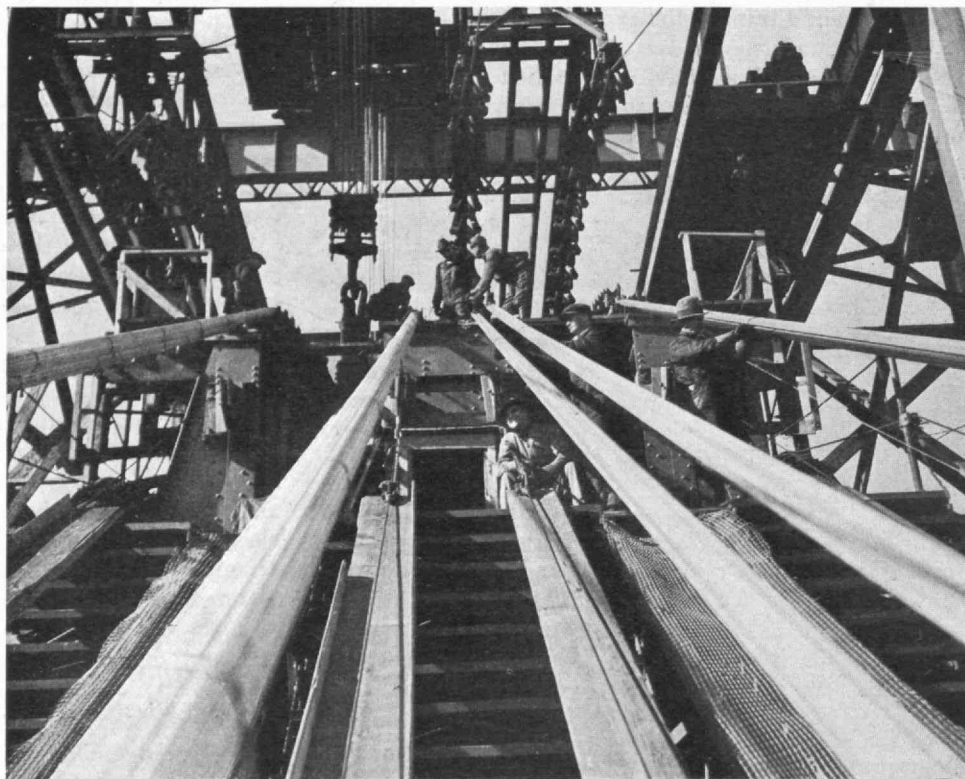
The results in modern cities can be imagined when it is estimated that soot accounts for a deposit of 460 tons annually on a square mile in Chicago; that the duration of sunshine in the British towns of Leeds, Sheffield, and Birmingham in the winter months is less than half that in the outlying districts; that smoke clouds may reduce solar energy by as much as 40%, making for colder weather and greater fuel consumption. One enthusiastic reformer has held that smoke increases humidity and thereby lowers the sensitivity for odors, taste, and touch, making it difficult for tea tasters and perfumery experts accurately to ply their trade.

Because news of these baneful effects is spreading (the

tea tasters' guild may be partially responsible), public interest in smoke abatement increases. Since coal has for years been mankind's main source of fuel, (and smoke!) and because anthracite is scarce and expensive in many parts of the world, while bituminous is fairly plentiful, attention has been directed to converting bituminous, especially for domestic use, into an ignitable, solid, smokeless fuel. One way to do this is by a low-temperature (around 400 degrees C.) carbonization method, the object being to produce a resultant of high calorific value with coal tar and gas as by-products.

Undaunted by the record in Washington of over a thousand commercially unsuccessful patents involving low-temperature carbonization of coal, a plant to convert Illinois and Indiana bituminous into the equivalent of high grade anthracite started operating last month in Chicago. Said by its backers to employ a process developed after eight year's experimentation, the plant's capacity is to be 600 tons daily and from each ton of bituminous with a volatility of 36%, are to come 1,400 pounds of char with a volatility of 12%. To this will be added petroleum asphalt as a binder to form a pillow-shaped briquet, trade-named "Prestcoke". Being a secret process in what its inventors evidently believe to be an essential detail — a specially designed carbonizer — no accurate prediction as to the technical effectiveness of the venture is possible at this writing.

Commercially, however, like other low-temperature carbonization processes, the resultant briquets must fetch a price at least equivalent to the purchase price of bituminous coal, that is to say "Prestcoke" must find a market at a higher price per ton than that of the bituminous, leaving the tar and gas by-products to cover the cost of operation and provide for profit. The question is



Galloway

WEAVING THE MILE-LONG CABLES OF THE HUDSON RIVER BRIDGE



Galloway

NORMAL MIDDAY TRAFFIC ON FIFTH AVENUE, NEW YORK CITY. ALMOST EVERY AMERICAN CITY HAS ACUTE TRAFFIC PROBLEMS WHICH WILL BE SOLVED ONLY BY BOLD AND FORWARD-LOOKING CITY PLANS. SEE PAGE 26

really whether in the Chicago area where anthracite is costly, there are enough public-spirited householders with an appreciation of the ultimate high cost of low-priced bituminous due to the smoke nuisance.

A more hopeful development is the increasing use of gas. Having slumbered for years, this industry is now awakened to its opportunities, and the sale of manufactured gas is quadruple what it was 25 years ago while the output of natural gas climbed from 662,000 million cubic feet in 1921 to 2,000,000 million cubic feet in 1929.

Stimulated by the production of welded pipes noted on page 30, natural gas is now being distributed through nearly a quarter million miles of pipe line, from Louisiana to Georgia, from Texas to Oklahoma and to St. Louis. Plans are afoot for piping it into Chicago, a project encouraging to Chicago tea tasters, if not to the backers of "Prestcoke".

Ice from Mexico; Peaches from Georgia

"... hot ice and wondrous strange snow,
How shall we find the concord of this discord?"

— Shakespeare

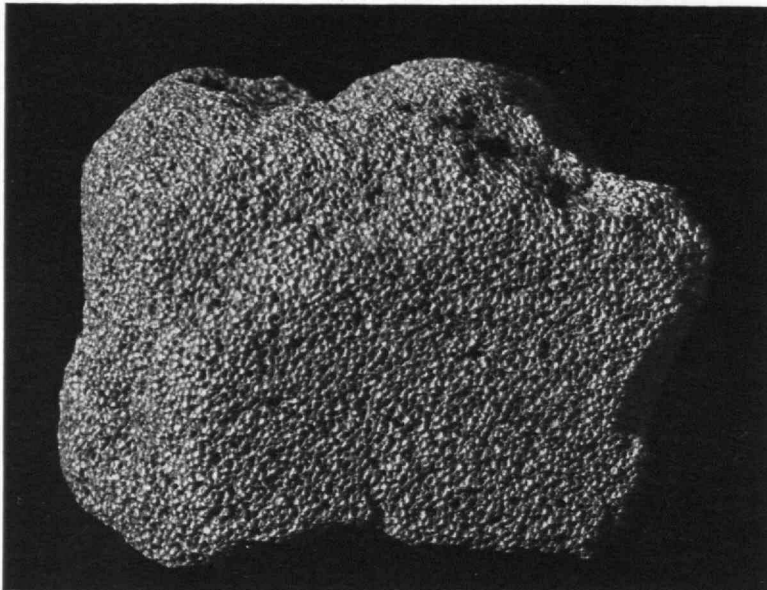
DRY ICE — solidified carbon dioxide which does not melt but evaporates — is well known and widely used as a clean, improved substitute for ice. Its production

(about 350 tons a day) has been limited, however; its price high (about \$100 a ton). Reason: the necessity of manufacturing the carbon dioxide gas synthetically.

Cheaper CO₂ solidified may be in the offing. According to news from the Quebracho oil fields in Mexico, the Globe Petroleum Company, while drilling for oil, has discovered an apparently inexhaustible supply of carbon dioxide gas and has installed a plant to solidify it (by reducing its temperature to minus 78° C.) into cubes weighing 45 pounds each.

Three of the Ward Line's steamers in the Tampico-New York service have been equipped to carry 200 tons of these cubes in separate compartments entirely enclosed and insulated with 12-inch walls of cork — the heaviest insulation on record.

Any method for more cheaply obtaining and solidifying carbon dioxide will be an impetus to the marketing of quick-frozen foods. Fish, meats, many vegetables and fruits may be so treated, shipped to the consumer, and thawed out ready for eating without detracting appreciably from their original freshness and edibility. A difficulty in this marketing method, however, has been lack of facilities for refrigerating quick-frozen foods at the retail point. It is necessary to keep them at a temperature of 15° or 20° F. and special storage cabinets using solidified carbon dioxide have been designed to side-step



M. I. T. Photo

A SAMPLE OF AEROCRETE, THE NEW LEAVENED CONCRETE. SEE PAGE 31

this difficulty. It is necessary, however, for the retailer to be able to purchase solidified carbon dioxide at a cheaper price than it is at present obtainable.

If the dry ice from Mexico proves to be a dependable source of supply in large quantities, or if lime manufacturers near metropolitan centers in the United States find methods for solidifying their waste carbon dioxide, then American housewives may expect to be regaled with frozen-food advertising. The latest development in the field of quick-freezing is its extension to include peaches, most perishable of fruits. A plant has been built in Montezuma, Ga., the center of contiguous peach orchards, for freezing peaches so that they may be shipped long distances with the use of solidified carbon dioxide. Because of these and other manifold uses, a prediction was made at the September meeting of the American Chemical So-

ciety, that 30,000 tons of CO_2 be used this year.

Students of the history of chemistry will recall that the early Nineteenth Century was the age of the liquefaction of gases and that Thilorier, after developing a method for the manufacturing of soda water, the present ubiquitousness of which is ruining American stomachs, proceeded further and condensed carbon dioxide (1834). Once when he was experimenting with the vessel containing the gas in liquefied form, he found that when the liquid was allowed to escape through a jet into a heat-insulated box, a snow-like solid was formed. This substance is the dry ice now being shipped to New York from torrid Mexico.

Welding Progress

FOLLOWING the successful operation of the *S. S. Carolinian*, the first all-welded, self-propelled vessel in American maritime history, the Charleston (S. C.) Dry Dock and Machine Company is estimating on six more ships of the same type. Twice since the *Carolinian* steamed past Fort Sumter Light on her maiden voyage, which was reported in *The Review* last April, she has been drydocked and examined for leaks or distortions. So far none have developed.

This electrically-welded, rivetless oil tanker with a 2,500 barrel capacity is 120 feet in length with a beam of 23 and a draft of 10. Besides a saving of a fifth in weight and a quarter in construction cost over a riveted vessel, her builders estimate her cargo space was increased 20,000 gallons.

The success of the *Carolinian* is probably responsible for the design of a 200-ton barge to be built immediately for the Inland Waterways Corporation. It is to be welded along the seams, effecting thereby a saving of \$15,000.



Duluth Chamber of Commerce

FREIGHT YARDS OF THE DULUTH, MISSABE, AND NORTHERN RAILROAD, ORE-CARRIER FOR THE GREAT MISSABE IRON MINES



THE DAILY NEWS BUILDING, NEW YORK

Galloway

Another boost for arc welding is to be noted in the plans of an all-metal apartment house designed for early erection in Chicago. They call for use of the battledeck type of floor, demonstrated last spring at the meeting of the American Institute of Steel Construction at Biloxi, Miss., and mentioned in the March Review. The floors are to be placed on 25-foot spans and, with the conventional flat-arch tile construction, they would be $16\frac{1}{2}$ inches thick. Use of the battledeck type of floor, only nine inches thick, is to save enough space to get $21\frac{1}{2}$ stories in the height allowed for 20 under usual construction methods. A welded building with aerocrete floors (described adjacently) would be the lightest of the light, *ne plus ultra* in space economy.

Still a fourth item, from Milwaukee, is perhaps of larger immediate import. There the A. O. Smith Corporation, the company which turns out nearly 10,000 automobile frames a day in a plant run by only 120 men, has successfully increased the capacity of its welded pipe plant. The pipes are made by rolling steel plates longitudinally into tubes and welding the seams, and it is used primarily for large-diameter gas line pipe. In 1927 the plant started with a capacity of ten miles per day; it is now producing 32 miles a day almost entirely by automatic machinery. Before leaving the factory, the pipe is hydrostatically stressed

up to 22,000 pounds per square inch. It is very seldom that the slightest leak is found in the welded seam.

Leavened Concrete

TURNING to the humble baker of bread for inspiration, research has produced a building material of concrete which is composed of countless minute cells produced by a chemical process akin to the action of yeast in bread dough.

Aerocrete, as this new material is known, was originally developed by a Swedish scientist, who was able to make a serviceable substance, although it would not withstand great weight. Two years ago aerocrete was introduced in the United States and, following studies at Columbia University, it has been improved so that it now meets the most exacting fire and water-load tests required for flooring materials in New York City.

Its components are Portland cement, sand, and small quantities of lime, aluminum powder, and soda. The aluminum powder in an alkaline solution causes a chemical reaction when this mixture is poured in a thick liquid form, and the hydrogen liberated is the leaven that forms the cellular structure. The "rising" process is completed within an hour, when hardening sets in. Control of the ingredients makes it possible to vary the expansion from 50 to 150% of the original volume.

Recent tests of the new material showed that a floor of aerocrete $4\frac{1}{2}$ inches thick kept a temperature of 139 to 207 degrees on its upper surface during the last hour of a four-hour fire burning beneath it at a temperature of 1,825 degrees F. In a fireproof building the temperature of a fire will rarely exceed 1,700 degrees.

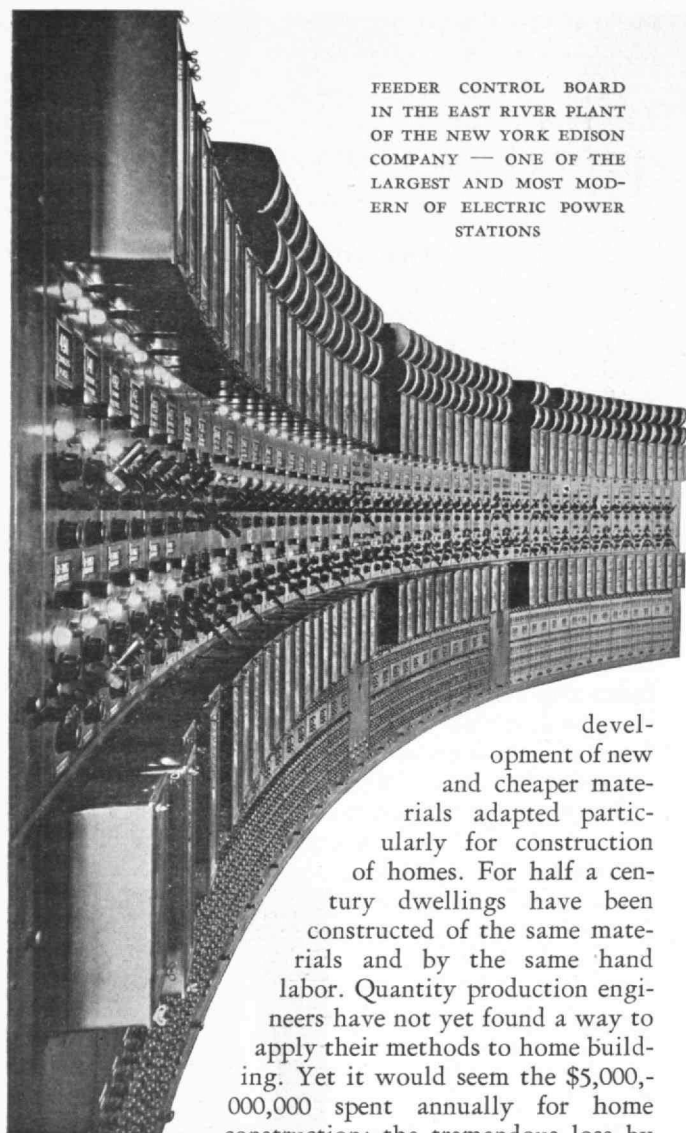
The advantages claimed for aerocrete as a structural floor are its lightness (its weight is 20 to 75% that of concrete), high heat-insulating value, and sound-deadening properties. It is estimated that it will reduce by one-fourth the weight of steel required to support a building, a reduction comparable to that afforded by welding (see page 30).

The high cost and limitations of present building materials, fire hazards and the expense of maintenance have been cited by Professor Ross F. Tucker, '92, head of Technology's Course in Building Construction, as indications of the need for



NUMBER 10 EAST 40TH STREET, NEW YORK

Galloway



FEEDER CONTROL BOARD
IN THE EAST RIVER PLANT
OF THE NEW YORK EDISON
COMPANY — ONE OF THE
LARGEST AND MOST MOD-
ERN OF ELECTRIC POWER
STATIONS

Galloway

development of new and cheaper materials adapted particularly for construction of homes. For half a century dwellings have been constructed of the same materials and by the same hand labor. Quantity production engineers have not yet found a way to apply their methods to home building. Yet it would seem the \$5,000,000,000 spent annually for home construction; the tremendous loss by depreciation, amounting to 10% the first year; and the \$500,000,000 annual write-off in this country because of flimsy construction, offered a worthy incentive to produce better materials and devise better methods.

Floating Power Houses

MUCH attention was created last year when the airplane carrier U. S. S. *Lexington* berthed at Tacoma, surrendered its mobility, and operated its generators to boost the power supply of that city while hydroelectric plants were incapacitated by drought.

It was this unique service rendered Tacoma by the Navy that might have convinced the New England Public Service Company of the feasibility of a floating commercial power plant it has long had under consideration. At any rate, has it purchased a 7,000-ton cargo ship, the *Jacona*, and is converting it into a power plant of 20,000 kilowatts capacity.

This floating plant will cost \$1,000,000, but its owners estimate that it will be available for nearly twice as many hours of service per year as an equivalent stationary power house in the New England system.

To any point of the coast where there is a power shortage, the *Jacona* will steam, anchor, or slip into a suitable berth, and make an electrical tie-in to the local power system. Thus, a supply of energy up to 20,000 kilowatts can be made available in a few days, in contrast to the weeks or months required for building a new transmission line or power house.

Mastering Rivers in the Laboratory

A NATIONAL hydraulic research laboratory to be operated by the United States Bureau of Standards, of which Dr. George K. Burgess, '96, is director, is now in process of planning by a committee of the American Engineering Council. At present two of its members, John R. Freeman, '76, internationally known hydraulic engineer, and William B. Gregory, Professor of Experimental Engineering at Tulane University are making a study of the largest of the famous European laboratories where the value of research of this nature has long been recognized.

Mr. Freeman's knowledge of, and interest in hydraulic research had much to do with the opening this year of such a laboratory at the Institute. Here, under the direction of Professor Kenneth C. Reynolds, '25, who spent more than a year in Europe in hydraulic research, the new laboratory, one of the first of its kind in this country, is engaged in studies of fundamental importance.

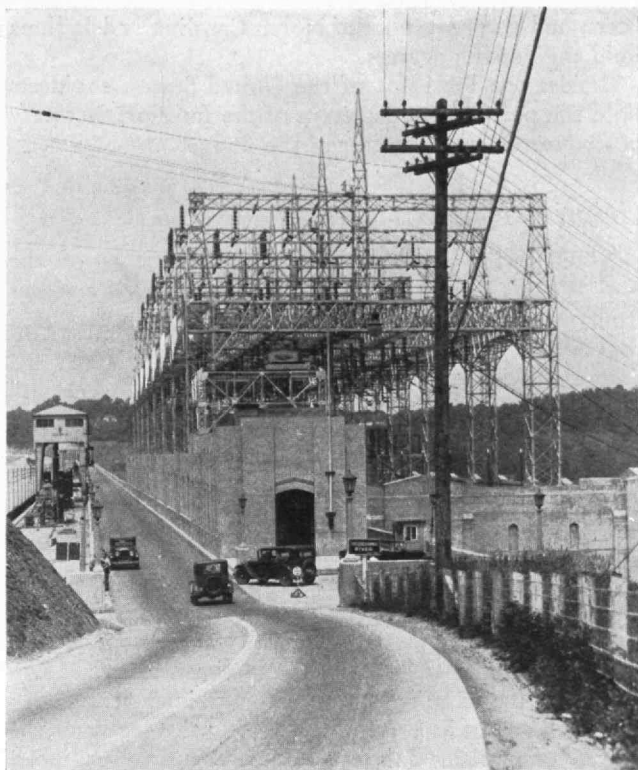
The projected national hydraulic research laboratory was authorized by the last Congress to meet a growing demand for a scientific solution of the control of the waters of rivers and harbors, design of dams and power projects, investigation of the laws governing the flow of waters, and the resistance of various types of soil to the action of liquids.

The value of such research is attested by the types of problems investigated in Technology's hydraulic laboratory: the design of an earth dyke for control of the waters of the Connecticut River at Hartford, Conn., which study entailed construction of a scale model to observe the action of the water under various conditions of flood control; methods for preventing erosion in the bank of the Connecticut River at a sharp bend near Northampton, Mass.; tests on a model of a power dam in Pennsylvania which revealed the need for changes in design of the spillway and river-bed below the actual dam.

Road Congress

ASSEMBLED in Washington the first week of this month are the delegates from 60 odd nations represented at the Sixth International Road Congress — an international conference in which no one will be asked or expected to surrender any fancied national security. This uniqueness, and the records of previous Congresses (Paris, 1908; London, 1913; Seville, 1923; Milan, 1926), together with the activities of the Permanent International Association of Road Congresses, the body which cares for a continuity between meetings, make the outlook for Washington seem hopeful indeed.

The agenda comprises, of course, papers on manifold broad questions such as how best to lay bitumen, asphalt, brick, tar, or concrete, accepted practices for financing



ROADWAY ACROSS CONOWINGO DAM

Roberts

highways, regulating traffic, and the like — questions which disregard international boundaries. There will be trips to laboratories in and about the capitol and arrangements include an exposition of modern road machinery. Also the chance presented foreign delegates to make a first-hand, full-scale study of the roads of North Carolina, only a short jump south from the Potomac and surely the finest highway system of any state in the Union, will be tempting.

Together with the proud account of Iowa's final emergence from the mud, the Congress may expect to hear how Siam successfully builds crownless, dirt highways, allowing the water from frequent and torrential rains to drain to the center and seep through, thus helping compact the earth. Iowa, parenthetically, captures this year's *cordon bleu* for hard-surface pavement on her record of laying four miles of concrete per working day. Three-quarters of her 1,025-mile 1930 program were down by September 12, and on that day Nebraskans celebrated, for Omaha was at last linked by a continuous pavement with the sea.

Besides Siam, other far away places will report: Finland, on her 230-mile gravel road within the Arctic Circle and leading to the Fjord of Petsamo; six Central American countries on their 566 miles of graded or finished roadway between Mexico and the Canal Zone. The remaining 1,058 will be completed before long and will connect with the international artery between Laredo, Tex., and Mexico City, to be in operation during 1931. Some references may be also expected to the proposed turnpike down the spine of South America. Colombia is building rapidly, Ecuador is favored by natural rock roads along her coast and, in Peru a 1,300-mile coastal road was being improved by the previous government.

Some day balloon tires may roll from Labrador to Cape Horn.

Notice also is bound to be taken by the Congress of experimental construction practices now undergoing trial and the growing tendency to permit higher speeds of traffic to relieve congestion. The novel metal base highway started last month in Illinois consists of a wearing surface laid on an iron plate directly on the subgrade. If a success, it ought to threaten the prestige of the massive concrete slab which, in 25 years, has become accepted as a prime essential of a heavy duty road. As to speed limits for motor vehicles, England and five American states (making a total of 11) abolished them this year. Instead of speed, dangerous driving becomes the criterion for reprehension. Besides these five states converted to the "reasonable and proper" column, four others this year have boosted their allowable limit by 5, seven by 10, and one by 15 miles per hour. The growing density of traffic makes it imperative that it move fast.

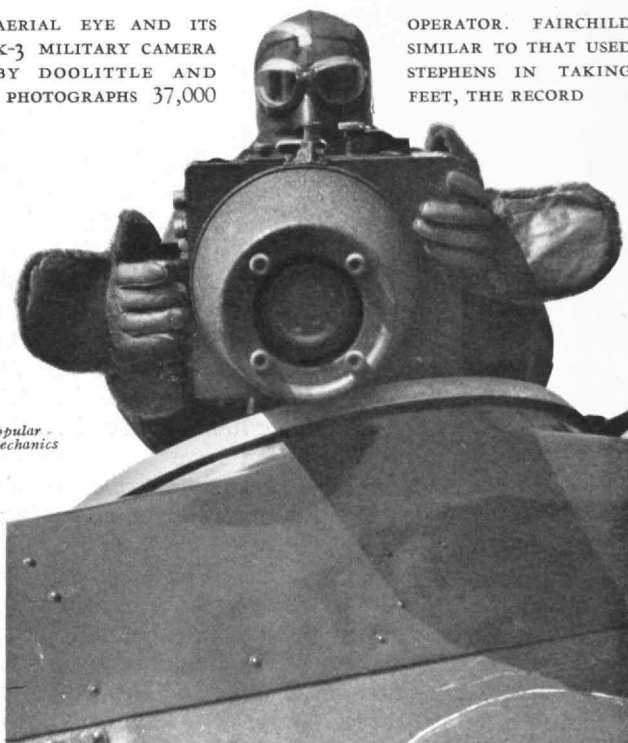
Consideration will undoubtedly be given to the effects of good roads aside from affording improved transportation facilities. Think of what the thousands of automobilists freely crossing and recrossing the Canada-U. S. border daily do towards promoting a better common understanding between the two countries; contrast China, thickly settled but comparatively roadless, with Europe; study the growth of the United States between 1904 when there were 150,000 miles of *surfaced* highways with only 141 miles *paved*, and 25 years later when 600,000 miles were surfaced including 90,000 paved and 40,000 hard-surfaced. Obviously the interchange of ideas by delegates will be most stimulating and helpful and a corps of translators will be of inestimable aid by making the papers available in four languages: English, French, German, and Spanish.

But in a larger sense the lasting benefit of this initial

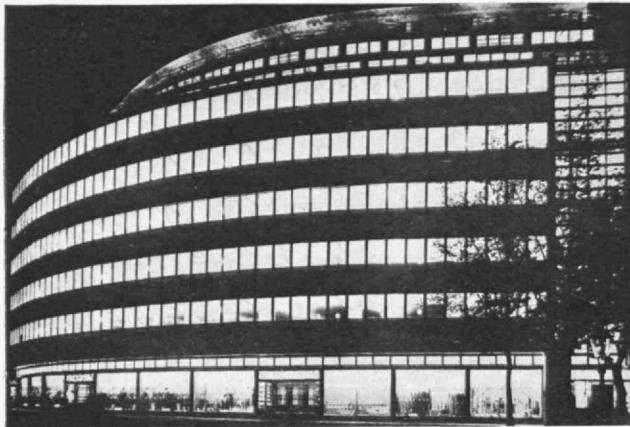
AERIAL EYE AND ITS
K-3 MILITARY CAMERA
BY DOOLITTLE AND
PHOTOGRAPHS 37,000

OPERATOR. FAIRCHILD
SIMILAR TO THAT USED
STEPHENS IN TAKING
FEET, THE RECORD

Popular
Mechanics



cisatlantic Road Congress may be expected to derive from provoking world-wide thought on the possibilities for improving international amity, social conditions, internal goodwill, and economic stability by the expansion of highway systems.



Keystone

NIGHT VIEW OF A BERLIN DEPARTMENT STORE DESIGNED BY ERICH MENDELSON. NOTE THAT CARRYING COLUMNS ARE NOT APPARENT, PERMITTING THE CONTINUOUS WINDOW STRIPS

Who's Who

LAWRENCE W. WALLACE, enterprising executive of the American Engineering Council, has completed a study of the engineers and architects listed in "Who's Who in America" (1928-1929).

He finds that among the 28,805 notable living men and women in the United States listed in this directory, are 2,858 engineers and architects. Among the 2,858 are 1,417 academic degrees in branches of learning other than science as well as 2,497 scientific degrees, and memberships in 1,138 associations, conferences, boards, and commissions, of which half are non-technical.

In this group of engineers and architects, there are, or have been, ten governors, 13 members of Congress, two members of the Cabinet, and the President of the United States. Five hundred and eighty-eight hold 905 memberships in Phi Beta Kappa, Phi Kappa Phi, Sigma Xi, and Tau Beta Pi, the four honorary fraternities in which membership connotes recognized ability in the field of scholarship. These engineers and architects also hold 4,785 official positions in 3,928 organizations, of which 2,993 are industrial and commercial companies. The position of president in industrial and commercial organizations is held by 1,128, in engineering firms by 72, in banks and trust companies by 68, in colleges by 23.

Their great influence in public life is indicated by the fact that over one-half of them have served, or are serving, municipal, state, or federal governments. To the operation of city governments 208 are contributing, and their total number includes 28 city engineers, 18 mayors, six city managers, three chiefs of police, and two superintendents of city schools.

At the time of the investigation, 59 were in state work. Mr. Wallace states that out of the group besides the ten governors have come five legislators, and a state district attorney. The present governors of Delaware, Utah, Wyoming, New Jersey, Alaska, and Alabama are engi-

neers, and the governors of North Carolina and Indiana hold engineering degrees.

Besides the President of the United States, engineers hold the portfolio of Secretary of the Interior, Secretary of Commerce, and Director of the Budget.

Aviation Novelties

ONE of the abandoned flying experiments of the Wright Brothers — that of obtaining lifting power from rotating cylinders instead of wings — has been resuscitated by three inventors who are working on a design of this type off Mamaroneck, Long Island.

Their model, aside from being wingless, is similar in appearance to a seaplane. The traction power is supplied by a three-bladed steel propeller driven by a single motor located in the nose of the plane. To obtain lifting power, an auxiliary motor supplies the power for rotating the cylinders which replace the wings.

The principle involved in this experiment is an aeronautical adaptation of the Flettner rotor ship which German engineers in 1925 claimed would revolutionize marine locomotion. Subsequent experiments have shown this principle to be workable although inefficient.

"With safety in aviation occupying the center of the stage," remarked a prominent aeronautical engineer, "I can't conceive of a plane, obtaining its lifting power from rotating cylinders, playing a very prominent part in the future of aviation. If the auxiliary motor should stop, the plane would drop to earth like a pancake."

Curtiss-Wright Corporation is reported to have already spent \$200,000 to develop a vertically rising aircraft and is still experimenting.

The difficulties it faces are immense. Helicopter models, only a few feet in diameter, have made inspiring performances, but when such craft are made sufficiently large to lift people, many unforeseen construction difficulties present themselves which are non-existent in the models. In small models, the rotating surfaces are extremely light and do not require the structural bracing which is necessary in full-sized machines. These rigorous demands of aerodynamics are obstacles which must be met before vertically rising machines become a reality.

American Chemical Society Growth

NEWSPAPERS have published many columns about the meeting of the American Chemical Society in Cincinnati, early in September. It is pleasing evidence of the recognition the public is giving to the great scientific societies, of which the Chemical is certainly one of the largest and most influential.

In the past 25 years, according to the President's report, the American Chemical Society has grown in membership from 3,079 to 18,000 and has increased its budget from \$15,000 to \$557,000.

During the present year, it will spend \$486,000 in publishing its journals and documents. In spite of this large appropriation valuable articles would remain unpublished without the assistance of funds given by the Chemical Foundation. Around \$95,000 has been supplied beyond the normal amount the Society has available for reporting scientific work.



An Obstinate Stalking of Ultimate Reality

PROCESS AND REALITY: AN ESSAY IN COSMOLOGY, by A. N. Whitehead. \$3.00. xii+547 pages. Boston: Macmillan.

PROFESSOR Alfred North Whitehead's "Process and Reality" may with especial appropriateness be described in the terms which William James once proposed to apply to all metaphysics. It is an unusually obstinate attempt at clear and correct thinking about ultimate reality — the actual nature of the cosmos as distinguished from its apparent nature. It deals with the totality of the universe and its internal relationships, as distinguished from the artificially separated slices of it with which the several sciences deal in isolation.

The sciences, because of their necessary refusal to examine the universe as a whole, cannot give us the complete truth, but only a useful approximation of the truth about special aspects of the universe.

"Every scientific memoir," says Professor Whitehead, "in its record of the 'facts' is shot through with interpretation," though he is willing to add later that "the chief danger in philosophy is narrowness in the selection of evidence."

"Process and Reality" proposes a new cosmology, "a system of ideas which bring the aesthetic, moral, and religious interests into relation with those concepts of the world which have their origin in natural science." It is based on certain aspects of the philosophy of Plato — especially the *Timaeus* — Aristotle, Descartes, Hume, and Locke.

It begins by repudiating — "in so far as concerns their influence on philosophy" — nine prevalent habits of thought, some of them very popular in scientific circles at the moment. These include the distrust of speculative philosophy, "trust in language as an adequate expression of propositions," Kant's doctrine of "the objective world as a theoretical construct from purely subjective experience," and "belief that logical inconsistencies can indicate anything else than some antecedent errors."

Professor Whitehead blames "these nine myths and fallacious procedures" for many of the snags into which nineteenth century philosophy ran. Language he regards as an especial difficulty. Save in the limited sphere of mathematics, we have no adequate instrument for the expression of our thoughts. Yet, if we poor limited humans would convey our ideas to one another at all, we must use language, which — whether adequate or not — is the only means we have.

Thus on his guard, Professor Whitehead through 50 cautious pages defines his terms and states four sets of categories, one of which includes 27 fundamental propositions. He then launches forth on his cosmology.

He begins with the fairly obvious fact that the conventional scientific views of cosmology can no longer rationally explain scientific observations of various aspects of the universe in terms of the whole universe. The old physics is inadequate. The universe cannot be

"static stuff," matter whose nature is forever fixed. We know it to be "fluent energy." This is ultimate. It has, in the endless and beginningless history of the cosmos, passed through four phases, the first of which is God. God has two aspects, or, as Professor Whitehead puts it, "the nature of God is dipolar. He has a primordial nature and a consequent nature." The first of the four phases of the cosmos is the unmoved mover, outside of time and space, the primordial aspect of God. In the second phase, this Primordial Divine takes form in actuality, the world we know of what is conventionally called "matter" — stars and subway trains and sheets of paper with book reviews printed on them, not to mention the human race.

The third is a "perfected actuality," in which the many and the one are united, "the ultimate unity of actual fact with the primordial conceptual fact." And finally, there is the other pole of God, so to speak, or what Professor Whitehead calls the "consequent nature of God." This "is conscious; and it is the realization of the actual world in the unity of his nature, and through the transformation of his wisdom."

"Philosophy," says Professor Whitehead, "never reverts to its old position after the shock of a great philosopher," and it is safe to say that philosophy will never revert to its old position after the implications of "Process and Reality" are fully comprehended, and the "philosophy of organism" which it expounds is understood.

One might almost call this a scientific philosophy. The phrase, it is true, would not please the author, whose system takes up all the sciences into something larger than themselves. But the phrase at least suggests the patient willingness to proceed by slow degrees and not profess omniscience, which is the best evidence of the scientific spirit. Professor Whitehead has faith in speculation as a means of attaining truth, not because he thinks it is infallible, but because he thinks it helps the mind of man to move closer and closer to ultimate truth about ultimate reality.

Even in presenting this finished metaphysical system, he is "quite aware how shallow, puny, and imperfect are efforts to sound the depths of the nature of things."

At least, speculation is no worse off than plain, everyday, inductive, brass-instrument science. The history of thought is littered with discarded metaphysics, but it is quite as littered with abandoned scientific theories. After all, "we no more retain the physics of the Seventeenth Century than we do the Cartesian philosophy of the century." Philosophy is chiefly important as a means of fusing religion and science "into one rational scheme of thought." It may never reach complete success (any more than science does); but "at the very least, men do what they can in the way of systematization, and in the end achieve something. The proper test is not that of finality, but of progress."

JOHN BAKELESS

The Mysterious Mr. Smith

GEORGE EASTMAN, by Carl W. Ackerman. \$5.00. xviii + 522 pages. Boston: *Houghton Mifflin Company*.

"SO FAR as we know," writes Professor Edwin R. A. Seligman in an introduction to this book, "Mr. Eastman was the first manufacturer in the United States to formulate and to put into practice the modern policy of large scale production at low costs for a world market, backed by scientific research and extensive advertising."

As Mr. Ackerman shows in exhaustive detail, so important a contribution to our social order was the resultant of the following achievements and innovations on the part of Mr. Eastman:

1. The invention of the first film, the coat of which was stripped after exposure and developing, making a transparent photographic negative

2. The development of nitro-cellulose film (experimented with by Eastman, patented by Reichenbach, his associate)

3. The invention of the machinery and processes for making film

4. Creation of a company to manufacture film and of the Kodak to create a market

5. Manufacture of the first film for Edison's Kinetoscope, the first motion picture camera

6. Elimination of electricity from film

7. The development, manufacture, and marketing of film in continuous reels

8. The engagement of a trained chemist to devote all his time, at the expense of the business, to chemical research — one of the earliest known recognitions of pure research as an aid to industry

It required an inventor who was also a business genius; a business genius, who was also a practical idealist, to thus achieve a scientific victory and simultaneously to usher in a new economic procedure. For having combined these qualities and used them with unprecedented efficiency, Mr. Eastman became, as Nicholas Murray Butler has said "a literally stupendous factor in the education of the modern world," and as Lord Kelvin many years before had seen, one of the greatest contributors to scientific research. (What a debt, for instance, astronomy owes to photography!)

One is inclined to feel, however, that the development of the photographic industry was, as values stack up, of lesser importance than the recognition and impetus Mr. Eastman gave to industrial research. This was something fundamental, of infinite fruitfulness, a source of economic and political progress.

It was also the source of Mr. Eastman's interest in the Institute of Technology. "While formulating plans for a new plant," writes Mr. Ackerman, "he communicated with Technology and employed Darragh de Lancey, of the class of 1890, placing him in charge of the first construction work at Kodak Park.

"In 1891, searching for another research chemist, Eastman asked Dr. Drown, the distinguished Professor of Analytical Chemistry at the Boston institution, for recommendations, adding that he had 'a great deal of confidence in the material you turn out at your institution.' During the next few years Eastman engaged Lovejoy, Haste, and other 'Tech men.' Enthusiasm for this

'material' increased to such an extent that he began to read the annual reports of President Richard C. Maclaurin and study that system of technical education. This continued for nearly two decades, while he observed the industrial asset value of technically trained men and posted himself in the history of that institution."

The result of this "confidence in the material you turn out," as everyone knows was the gift to the Institute by a "Mysterious Mr. Smith" of some 20 millions of dollars. In one of the most dramatic chapters in the whole book, the author sets down the story of the secret negotiations between President Maclaurin and Mr. Eastman, culminating in the great gift.

E pur Si Muove

THE GREAT ASTRONOMERS, by Henry Smith Williams. \$6.00. 618 pages. New York: *Simon & Schuster*.

THERE is a legend that Galileo, after being forced to renounce his heretical doctrine of the earth's motion, retired from the presence of his persecutors mumbling "E pur si muove" ('it does move, none the less'). Authentic or not, that legend is true to the spirit of Galileo as it is to the nature of all the "Great Emancipators" in astronomy, from Eratosthenes to Einstein.

It is the courageous spirit of "E pur si muove" that Dr. Smith most emphasizes in his history of these men. In the beginning he forewarns the reader "that if your interest is in stars, as such, rather than in men, this book is not for you. Any textbook on astronomy will better serve your purpose. This is the story of what the great astronomers taught us, not about the stars, but about ourselves."

What the great astronomers have taught us about ourselves Dr. Smith interprets chiefly as a recognition of our gullibility, our susceptibility to prejudice and superstition, our power to triumph over these if we summon to our aid the spirit of Galileo. Bruno did not die, nor Galileo renounce, without contributing thereby to man's escape from the grip of obscurantism, and to his progress toward establishing his true relationship with the universe.

By emphasizing this aspect of astronomy Dr. Smith is able to dramatize much of it in a wholly unobjectional way. Now and then he falls into the polemic and in the following instance to theatricality.

After completing Book I, *The Old Heaven*, he announces by title page Book II, *Astronomy in the Medieval Period*, which contains this sole passage: "From the Council of Nicaea, at which the Emperor Constantine made Europe safe for Athanasian theocracy, to the time of Copernicus, whose great work, teaching that the earth is not the center of the Universe, was to remain under ban of the Council of the Inquisitor until fifteen centuries after the Nicene victory, the record of astronomical progress in all Christendom may most charitably be expressed in these words:"

(three blank pages)

It is deceiving, however, to give the impression that the book is altogether concerned with the effect of astronomy on human nature. Its 618 pages are packed with explanations, diagrams, and demonstrations.

J. R. K., Jr.



The Institute Begins a New Year

THE dawn of a new academic year on September 29, finds the Institute looking back on a summer of accomplishment and looking forward toward an increased registration, more dormitory accommodations, increased opportunity to extend financial aid to worthy students, and to many important changes in key personnel.

At a record breaking summer session, 1,650 students attended, a number greater by 150 than the total last summer. Among these students were public health workers attending the Public Health Institute of the Department of Biology and Public Health and a large group of teachers who attended the Institute's summer courses in the teaching of mathematics and science.

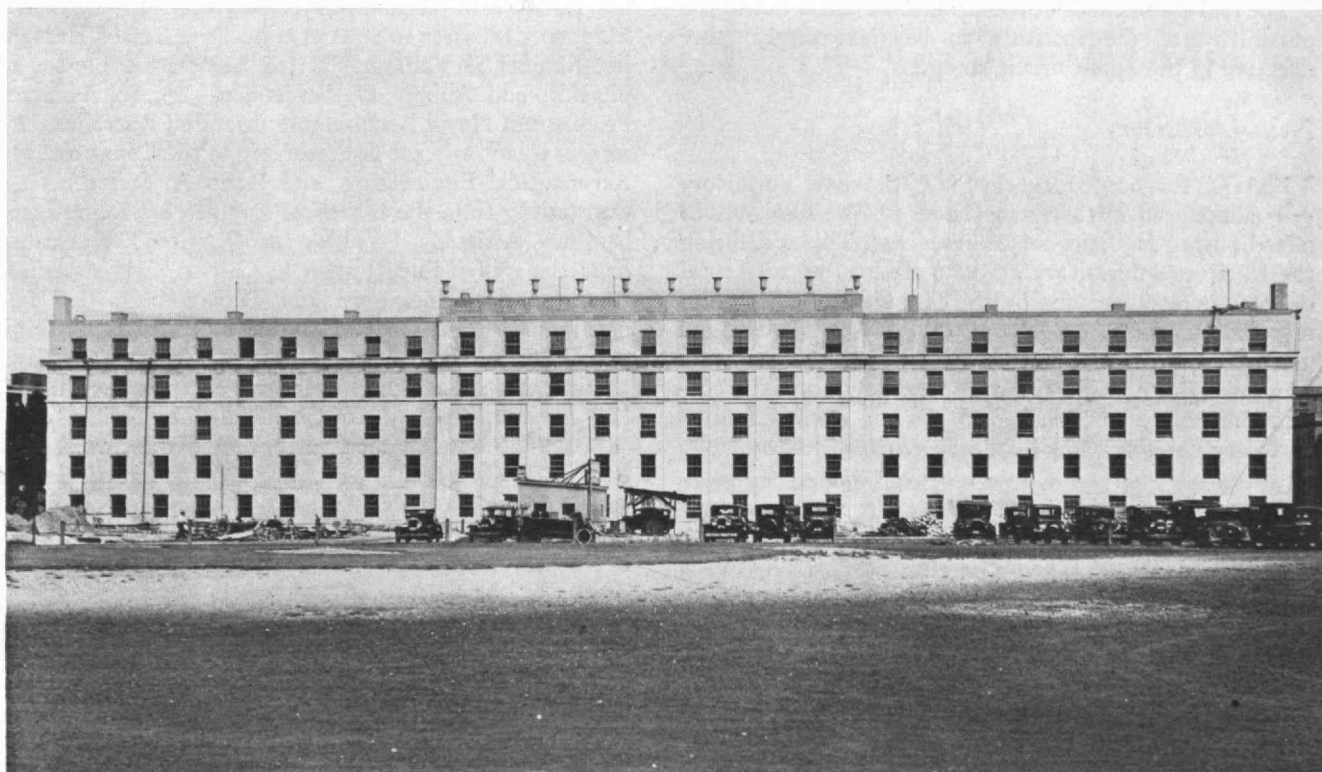
Despite all this academic activity, the harassed Buildings and Power Department busied itself by repainting and refurbishing buildings; keeping the growing expanses of grass green and flourishing through a drought and shortage of water in Cambridge; preparing the land west of Massachusetts Avenue to provide parking space for several thousand cars as the Institute's contribution to the National American Legion Convention due the middle of October; flood-lighting the Charles River side of the main buildings as a part of the dressing-up incident to the Tercentenary Celebration; maintaining a watchful lookout for the physical comfort of 46 students and 10

staff members at the 850-acre civil engineering camp in Maine, and the combined staff and student population of 14 at the mining camp in Dover, N. J.; erecting a cabin for outing use at the site of the freshmen camp at Lake Massapoag near Dunstable, Mass.; industriously co-operating with the contractors on the new dormitory; maintaining the Institute's Radio Communication Laboratory at Round Hill; administrating the day to day problems of its 200 odd regular employees with a smoothness and ease to which the official Institute has become accustomed.

Registration Forecast

REGISTRATION is to increase this year if the opinion of the Director of Admissions and the careful forecast of the Registrar throws any light on the matter. The latter, from studies dated September 15, predicts a rise of 8% in the number of entering freshmen and an increase of 4% for the number of students in the whole school.

For use of posterity the yearly counts as of November 1 are kept as the official census totals, but the preliminary report drawn every year on the third day of the first term has from year to year proved trustworthy for comparative purposes. Last year on the third day of the term there were 702 freshmen and on the third day of the present



M. I. T. Photo

THE NEW DORMITORIES WITH ACCOMMODATIONS FOR 210 MEN. BEHIND IS ANOTHER WING SIMILAR TO THIS, FORMING THE SECOND SIDE OF A FUTURE QUADRANGLE



PROFESSOR AND MRS. DUGALD C. JACKSON VISIT THE M. I. T. CLUB, CANTON, CHINA. READING FROM LEFT TO RIGHT (BACK ROW): Y. N. CHU, H. C. CHEN, WENTWORTH CHU, '24, H. F. LEE, '25, Y. Y. DAO, C. T. CHU, '22, H. CHEN, '15, S. K. LAU, '19, LONG LAU, '14, Y. M. CHU, '14. (FRONT ROW): W. F. GILMAN, '09, MRS. W. F. GILMAN, MRS. C. T. CHU, PROFESSOR AND MRS. JACKSON, MRS. S. K. LAU, A. R. KNIPP, '09

a year's sabbatical leave and during his absence the Department will be administered jointly by Harry J. Carlson, '92, Life Member of the Corporation, and Professor Harry W. Gardner, '94, who will care for the administrative details of the architectural work of the department. Professor William H. Lawrence, '91, will perform a like responsibility for Course IV-A, Architectural Engineering.

Professor Dugald C. Jackson, Head of the Department of Electrical Engineering has returned from a trip around the world and Professor Vannevar Bush, Eng.D., '16, abdicates as acting head. Professor Charles L. Norton, '93, who relinquished his position as Head of the Department of Physics to devote his entire time to the Division of Industrial Coöperation and Research, has turned over his

old office to the new Head of the Course, Professor John C. Slater, and now occupies the office directly opposite the entrance to the President's suite.

The familiar figure of Professor Harry W. Tyler, '84, who has gone to Washington as a consultant for the Library of Congress, will be missed as Head of the Department of Mathematics. In his place Professor Frederick S. Woods will be found. The new course in Business and Engineering Administration, separate from the Department of Economics and Statistics will come into its own this fall with Professor Erwin H. Schell, '12, as its Acting Head. Professor Davis R. Dewey continues as Head of the Department of Economics and Statistics.

In the Department of Physics there will be a new professor and a new assistant professor, George R. Harrison, of Leland Stanford University and R. M. Langer of California Institute of Technology respectively. F. Alexander Magoun, '18, rises to an Associate Professor of Humanities; Manuel S. Vallarta, '21, to Associate Professor of physics; and Aubrey D. Beidelman, '15, to Assistant Professor of Naval Architecture. Manfred Rauscher, '26, returns to an assistant professorship in the Department of Aeronautical Engineering, and Julius A. Stratton, '23, transferring from the Electrical Engineering Department becomes Assistant Professor of Physics. Resignations from the staff include Joseph L. Gillson, '21, Associate Professor of Mineralogy and Petrography; C. Hale Sutherland, '10, Associate Professor of Structural Engineering (who becomes Head of the Department of Civil Engineering at Lehigh University); Richard A. Wilkins, '18, Assistant Professor of Chemical Engineering.

Leaves of Absence not mentioned above include Henry B. Phillips (one year), Professor of Mathematics; Carroll W. Doten (first half of year), Professor of Political Economy; and Donald S. Tucker (one year), Professor of Political Economy.

Loan Fund Additions

ADDITIONS to the Technology Loan Fund over and above the \$4,200,000 announced as subscribed by Gerard Swope, '95, last June include the following: \$20,000 by William R. Kales, '92; \$10,000 by Edward L. Hurd, '95; and \$10,000 by Eugene H. Clapp, '95.

year, October 1, 1930, Registrar J. C. MacKinnon, '13, foresees 760 members of the Class of 1934. He also anticipates that there will be 420 graduate students, the same as a year ago; some growth in sophomores and juniors and a slight rise in the senior class. The next issue of The Review will report on the accuracy of Registrar MacKinnon's forecast. Perhaps it will publish his apologia.

Any such forecast is, of course, subject to error, but it would appear certain that more freshmen are coming, and that is significant. It will be the fourth successive year that the freshmen registration has shown an increase. Last year the freshman class increased by 25 over the freshman class of the previous year. In 1926-27 the registration included 495 freshmen; in 1927-28, 592; in 1928-29, 668; in 1929-30, 693 (all of these figures are based on the registration as of November 1).

The real significance of these added numbers lies in the possibility of the Institute to be increasingly more selective in the applicants it accepts.

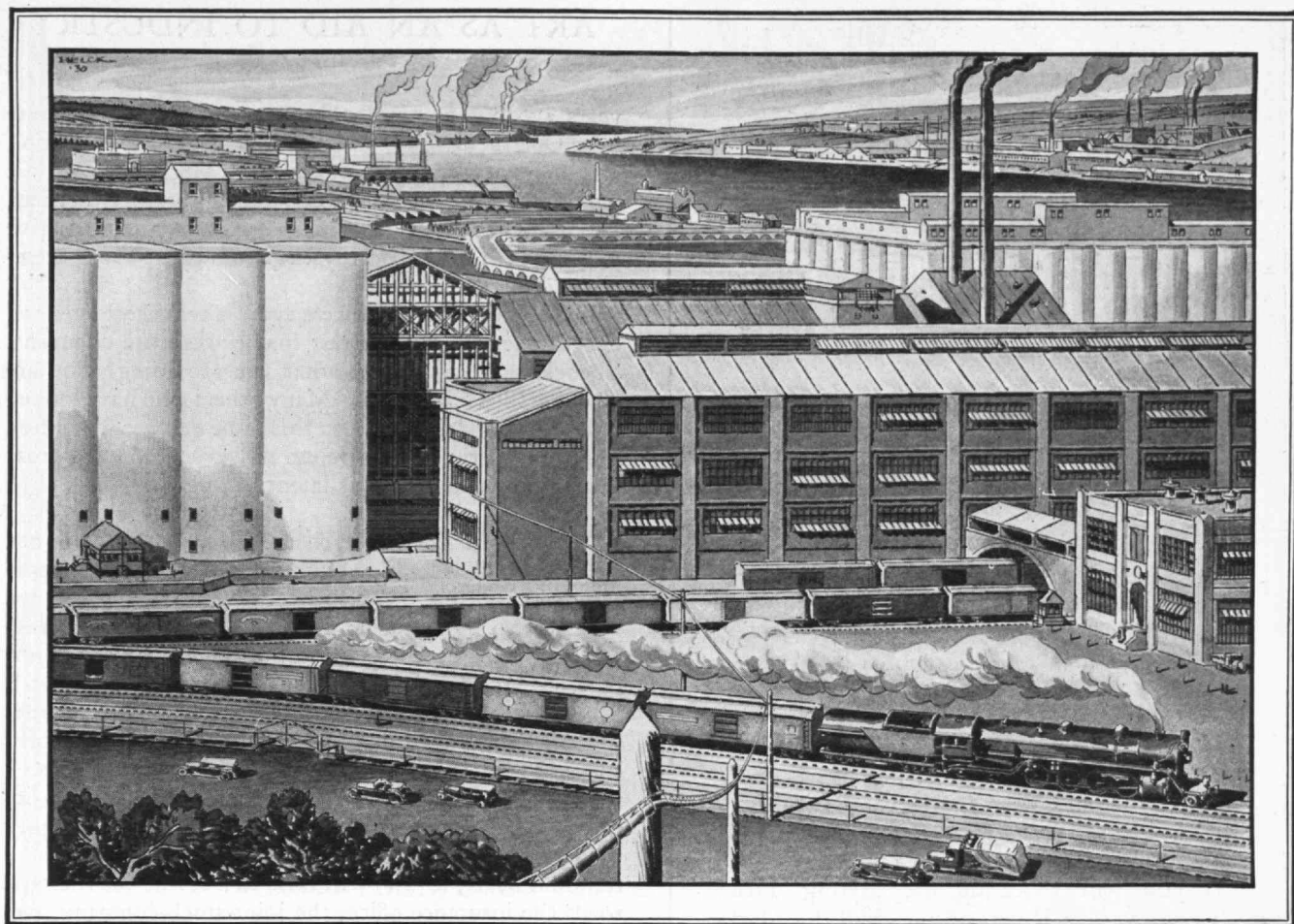
New Dormitory

READY for occupancy this fall, the new dormitory announced in the spring issues of The Review will offer housing facilities for 210 students. This will bring the Institute's dormitory accommodations up to a total of 630. As recommended by the committee comprised of representatives of the Corporation, Faculty, Alumni, and undergraduates which in the spring of 1928 exhaustively canvassed the housing situation, the new unit will contain the policy of "aiming to provide a maximum of necessary comforts and livability without luxury."

Personnel Changes

PRESIDENT Karl T. Compton, of course, will be at the helm when the Institute opens on September 29. He occupies a new office in the room recently occupied by the Personnel Division. His new office is part of a suite which includes the Corporation Room, occupied by Dr. Stratton, Chairman of the Corporation and the secretarial offices incident to both the President's and Chairman's activities.

Many other important additions and subtractions in personnel will be noticeable. Professor William Emerson, Head of the Department of Architecture, will be away on



Giants out of the earth

An Advertisement of the American Telephone and Telegraph Company

NO AGE but ours has seen so swift and complete an application of natural forces to the doing of daily tasks. Man's leaping knowledge . . . embodied in industrial plants and laboratories, airplanes and electric locomotives . . . has won new power and freedom. Machines are the symbols of a new relationship with nature. They are the servants of this civilization . . . helping men to extend the limits of their opportunities, to change the character of their life.

Americans have been pre-eminent in this change, for in whatever they do they seek to utilize nature to the utmost. They have taken the power out of the earth and from the running streams. They have made it turn the wheels of their industry and move their products by rail and road. They have made color and variety out of chemistry. They have spun

metal in slim wires to carry their voices anywhere with the speed of light . . . and make neighbors of the scattered millions of America.

Joining homes and work places, towns and distant cities, the Bell Telephone System has furnished a new communication for this new age. Forwarding the growth of the nation, giving better and more complete service in advance of the demand, its function has become the indispensable one of furnishing the means of social and business contacts in crowded cities and scattered villages over the length and breadth of a continent.

The Bell System is constantly improving the scope, speed and accuracy of its service.

Its work of contributing to the welfare and prosperity of American life goes on with increasing purpose and pace.



ESTABLISHED 1818

Brooks Brothers,

CLOTHING,

Gentlemen's Furnishing Goods,

MADISON AVENUE COR. FORTY-FOURTH STREET
NEW YORK

This Establishment has been Operated continuously for more than a Hundred and Ten Years and is still in the control of the Direct Descendants of the Founder

Our Representative
will visit the following cities
during the season to
take orders for
Ready-made Clothing
Furnishings, Hats and Shoes
for Men and Boys
Trunks, Bags, Leather Goods
and Liveries

If you will write us mentioning THE TECHNOLOGY REVIEW we shall be glad to let you know the dates on which he will be in the city nearest you

Akron	Houston	Portland
Albany	Indianapolis	Princeton
Atlanta	Kansas City	Providence
Baltimore	Lexington	Richmond
Buffalo	Los Angeles	Rochester
Chicago	Louisville	St. Louis
Cincinnati	Memphis	Salt Lake City
Cleveland	Milwaukee	San Antonio
Colorado Springs	Minneapolis	San Diego
Columbus	New Haven	San Francisco
Dallas	New Orleans	Santa Barbara
Dayton	Norfolk	Savannah
Denver	Oklahoma City	Seattle
Detroit	Pasadena	Syracuse
El Paso	Philadelphia	Toledo
Erie	Phoenix	Tulsa
Grand Rapids	Pittsburgh	Utica
Hartford		Washington

We are Manufacturing Retailers only: Established 1818. We have no agents except our own Travelling Salesmen and we maintain no branches except our

BRANCH STORES

BOSTON

NEWBURY CORNER OF BERKELEY STREET
NEWPORT PALM BEACH

ART AS AN AID TO INDUSTRY

(Continued from page 13)

years ago one of his daughters was about to graduate from Oberlin College, two children were in high school, and one or two were in the grades. More, he owns his own home, drives his own car, and is a respected citizen in his home town. Industry has many constructive radicals such as he, if only they could be shown themselves.

Look again into his sincere eyes. It was these eyes as I caught them in my portrait that evoked the comment, "Beneker, do you know what you are doing? You are painting Christ into men." Many others who have looked upon this portrait have seen this same quality. Too often in our industrial plants we are still crucifying the great spirit of leadership that is latent among men.

THE story of Peggy Hirsch and Homer are but two out of many that have convinced me of art's great opportunity in industry. "Art," Emerson once said, "has not yet come to its maturity, if it do not put itself abreast with the most potent influences of the world, if it is not practical and moral, if it do not stand in connection with the conscience, if it do not make the poor and uncultivated feel that it addresses them with a voice of lofty cheer. There is higher work for art than the arts — nothing less than the creation of man and nature is its end . . . for the hand can never execute anything higher than the character can inspire . . . proceeding from a religious heart, it [art] will raise to a divine use the railroad, the insurance office, the joint-stock company, our law, our primary assemblies, our commerce, the galvanic battery, the electric jar, the prism, and the chemist's retort, in which we seek now only an economical use. . . ."

If it is possible that art may raise to a divine use these things that Emerson mentions, why has it not done so? The truth is that art itself is largely to blame. If I quote Emerson to any of my fellow painters, they usually reply, "Hell, Emerson did not paint." They are out of sympathy with anything but their selfish technique. Almost every art school of any importance is conducted independently of other sources of cultural and technical training. They fail to teach students how to relate their training to the actual conditions they will find in the bewildering maze of industry that constitutes such a large part of modern life.

As a consequence much of modern art today has become barren and mute. There was a time when art spoke to people and meant much to them; now it is almost reduced to an academic exercise. Little wonder that Dr. Millikan and other scientists, defending science, decry contemporary art as inferior to contemporary science.

They are right, but how regrettable it is that they are right. A mathematician of note has pointed out that science has progressed at the rate of multiplication while art has progressed not even at the rate of addition. That this one-sided growth is unfortunate is, I think, indisputable. Science and art should proceed together hand in hand if we are to make the way of life smoother and more peaceful. Each is useless in itself; each is dependent upon the other. We should not let science (Continued on page 42)

Buy your . . .

STEAMSHIP TICKETS

OF RAYMOND-WHITCOMB

at the Steamship Companies' Published Rates

RAYMOND-WHITCOMB are authorized agents for all the leading steamship lines, and sell their tickets at the established rates. ¶ Every Raymond-Whitcomb office is headquarters for steamship information. There you can obtain expert advice regarding ships and routes; compare the sailing lists, the rates and the ship plans of various lines; purchase your ticket and obtain help with your passport and visas. ¶ Whether you travel for business or pleasure, you can save much time and effort by buying your tickets from the Raymond & Whitcomb Company.

ROUND THE WORLD CRUISE

To sail January 21, on the S. S. "Columbus," the largest, most luxurious, and fastest liner ever to make a world cruise

¶ Because the cruise-ship is faster, there will be less time at sea . . . the cruise will take only 107 days. Yet the program is extraordinarily complete in its calls, sight-seeing, and shore excursions . . . *Egypt, India, Ceylon, Straits Settlements, Java, Philippines, Siam, Hong Kong, Peking, Japan* (at Cherry Blossom time). Rates, \$2000 and upward.

MEDITERRANEAN CRUISE

To sail January 31, on the "Carinthia"

¶ This is the only Mediterranean Cruise which will be in Nice for the famous Carnival. With 13 days in Egypt and the Holy Land . . . visits to the great and historic Mediterranean cities—*Constantinople, Venice, Algiers*, etc. . . and to smaller places, such as *Palermo and Taormina, Cattaro and Ragusa*, which are typical of their countries. \$1000 & up.

WEST INDIES CRUISES

¶ Four Winter Cruises on the new Holland-America liner, "*Staten-dam*"—the largest and finest ship sailing to the romantic Caribbean. December 20, 1930—January 8—January 27—February 24, 1931.

¶ An airplane cruise to Cuba, Honduras, Salvador, Guatemala. Yucatan (for the ruins at Chichen Itza), and Mexico City—fourteen days.

LAND CRUISES TO MEXICO AND TO CALIFORNIA

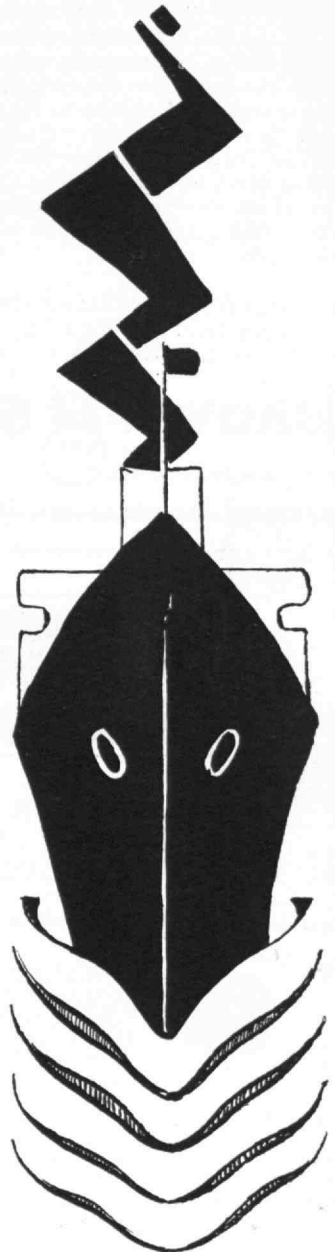
SOUTH AMERICA TOURS—JANUARY, 1931

Send for the Raymond-Whitcomb Travel Booklets

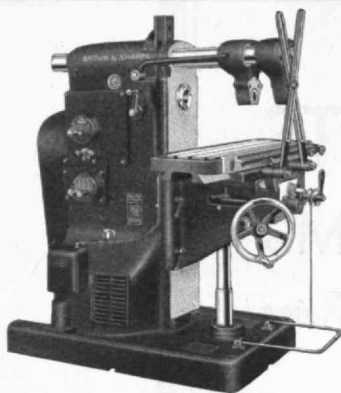
RAYMOND & WHITCOMB COMPANY

Executive Offices: 126 Newbury Street, Boston, Massachusetts

New York, 670 FIFTH AVE.; New York, 225 FIFTH AVENUE; Boston, 165 TREMONT STREET; Philadelphia, 1601 WALNUT STREET; Chicago, 176 NORTH MICHIGAN AVE.; Detroit, 421 BOOK BLDG.; Los Angeles, 423 WEST FIFTH STREET; San Francisco, 230 POST STREET and 300 agents in 219 cities or any authorized steamship agent



Load —
then
step
on the
foot
treadle



— the work advances to the cutter at fast travel, cutting feed is automatically engaged (it is impossible to jam the work into the cutter), the cut is made, the table returns automatically to the loading position and stops.

The Brown & Sharpe No. 2YB Standard Plain Milling Machine is noteworthy for — ease of operation — rapid set-ups — extremely accurate work. These features facilitate light production milling as well as tool room work.

It pays to be familiar with Brown & Sharpe equipment. Send for a copy of the No. 139 Catalog which lists our complete line.

BROWN & SHARPE

BROWN & SHARPE MFG. CO.



PROVIDENCE, R. I.



High Tension Wires of Improved Construction

Interlayer Braid in the wall of rubber insulation



U. S. Patent No. 1458803

Advantages

1. Increases dielectric strength with the result that the breakdown voltage is appreciably higher.
2. The safe working voltage is increased.
3. Much more reliable against entire failure in case of damage to outer portion of the insulation.

For 25 years manufacturers of High-grade
Rubber-covered Wires and Cables

**BOSTON INSULATED WIRE
and CABLE COMPANY**
Boston, Mass.

ART AS AN AID TO INDUSTRY

(Continued from page 40)

run away with the job of living. Since science begets industry, the corollary follows that industry bereft of art and its saving graces is lop-sided and inefficient.

Men of science go to nature, down to the infinitesimal electron. Artists also — at least some of them — go to nature for their inspiration. But in science the whole object is torn apart into its indivisible elements. Art takes all of these parts and builds them into something whole and, let us hope, into something beautiful. It is the difference between analysis and synthesis. Steinmetz once remarked that "all this development of natural resources is absolutely useless unless we develop along with it the spiritual nature in man, in which all that is best in art can help."

Most of us think of pictures when the word art is mentioned, but that is delimiting the term too narrowly. We must learn to conceive of art, not as a thing, but as a way of doing things, even as a way of living. Because the artist loses a sense of background in acquiring a limited technical training and a materialistic outlook, we gain the impression that the work of an artist is a method of putting paint on canvas. Many of us working in the field of the finer arts fail to realize that we have little, if anything, to say to the people through our art which may influence them for good or for evil. The artist must first realize the richness and fullness of life himself before he can share it with others. No wonder the scientists criticize our modern art as neurotic and over-sexed; no wonder we hear of censorship.

When business is conducted so inartistically as to produce such evils as war and unemployment, is it not time that we bring in outside influences such as art, the catalyzer, which has the power to unite elements without losing its own identity? From earliest times art has always been a means of communication. If it were not so, why should we spend millions of dollars to dig up the earth in the far east and at home to discover what man said to his neighbor in past ages?

From the beginning art has also been the handmaid to belief, to religion. Today we seem to avoid the word religion and tend to look upon it as a form rather than a way of living; as a creed rather than an effort to live in harmony with the universal laws of nature. Regardless of what we may call ourselves denominationally, there is back of these many forms one fundamental principle, our heritage from the past — the principle which gives life and by which we support life. The scientific mind calls it the electron; the religious mind calls it God. The Indian mother taught her children that "God is one, but He is called by many different names; why quarrel about names?" Is the name so very essential? If we must give a name to this principle, I like to think of it in terms of the All-Creative Spirit, the vital force in every atom and electron of natural resources, and that this Creative Spirit is the will to do in mankind. Considered in this light, is it so difficult to attain a consciousness of God the Creator working out His destiny through us as mediums? We know not for what purpose or for what ultimate destiny. Is it not time for us to get into harmony with this great Creator, this vitalizing force? *(Concluded on page 44)*

HAYDEN, STONE
and COMPANY

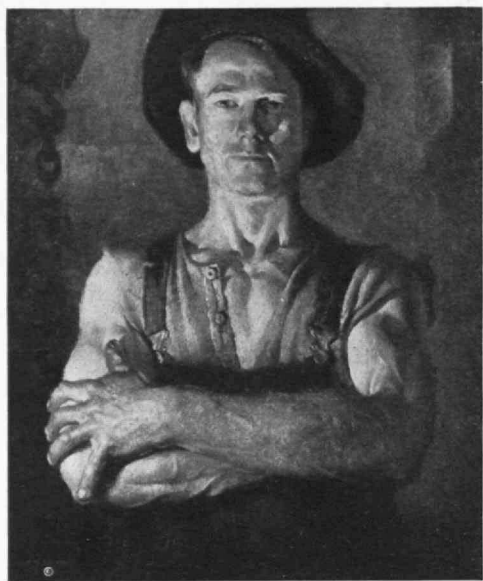
Bankers



BOSTON

111

NEW YORK



From a painting © by Gerrit A. Beneker

MEN ARE SQUARE

A portfolio of fifteen full-color reproductions of some of Mr. Beneker's industrial paintings, together with interpretive editorials by him, each print about 7" x 8", are available for educational purposes and offices and may be obtained from GERRIT A. BENEKER, Truro, Mass. Price \$15.00 for the portfolio.

Walker Memorial Dining Service

Meals Served During the Academic
Year for Any Type of Technology
Alumni Gathering

CLASS DINNERS GIVEN SPECIAL
ATTENTION

The recreational facilities can be made
available if desired

Menus submitted upon request

Address

A. W. Bridges, Walker Memorial, M. I. T.,
Cambridge, Mass.

ART AS AN AID TO INDUSTRY

(Concluded from page 42)

That phase of the Creative Spirit by which we support life becomes organized today in the form of industry with the result that the coördination of this spirit in natural resources and in man becomes a real problem. It has been the suppression and exploitation of the creative spirit in industry that has led the world not only to international war to control more of the earth's surface, markets, and trade routes, but to strife and misunderstanding within the borders of every community, sanctioned in the name of competition.

There have been many teachers of the life, growth, and service of this Creative Spirit, but I like to think of the greatest teacher of all as a working man, who once helped to support a family of eight people by his own trade. This working man was The Carpenter of Nazareth, who went "round about the villages, teaching." Here we find an artist in the highest sense, drawing his word-pictures always from nature and human nature. His teaching was not to condemn the law and the prophets, but to fulfill; he came that we might have life and "have it more abundantly." This should be our task today — to try to bring to fulfillment, to perfection, the real purpose of this universal Creative Spirit called industry. Are we willing to admit that the human mind that has given us the perfect working motor which carries us across land and sea, the electric light, the radio, and many other blessings of life is incapable of perfecting the art of controlling these things in a way that will make for peace, understanding, and service to Society? Emerson did not need to know how to put paint on canvas in order to tell us that art could raise to a divine use our material creation.

INDUSTRY AND ENGINEERING IN THE UNION OF SOCIALIST SOVIET REPUBLICS

(Continued from page 17)

above material considerations. However, all this may merely be the result of years of persecution at the hands of the former Imperial Government and of world ostracism since the revolution.

At a dinner the other evening one of the responsible government officials asked me what I thought of Litvinov's reply to Secretary Stimson's note of a few months ago on the Chinese Eastern Railway question, and I told him frankly that I thought it was very discourteous and that Litvinov had missed a great opportunity. To which he observed that Litvinov's foreign policy was unlike that of his predecessor and chief, Chicherin, in that the former preferred to speak out bluntly and without equivocation. He added further this significant comment, that the U. S. S. R. would not knuckle down to any country, nor would it take any attitude in its foreign relations that might be misconstrued as servility, even if that power were the United States. As I see how the minds of some of the men in power work, I am inclined to think that the Foreign Secretary and his confrères of the U. S. S. R. are probably suffering from an inferiority complex, which prompts a belligerent attitude in *(Concluded on page 46)*

WE SUGGEST that a time when many are anxious to get the most value out of each dollar expended, is a good time to join the Coöp and save 8 or 10 per cent. As a Technology graduate you are eligible for membership. Any member may buy at the Harvard Square store.

*The Harvard Square store now has
these departments—*

MEN'S CLOTHING

(READY-TO-WEAR)

Mezzanine Floor

MEN'S CLOTHING

(CUSTOM-MADE)

Second Floor

MEN'S FURNISHINGS

Street Floor — Left

MEN'S HATS

Street Floor — Left

MEN'S SHOES

Street Floor — Left

LUGGAGE

Street Floor — Left

BOOKS

Street Floor — Rear

**ENGRAVING and
PRINTING**

Street Floor — Right

KITCHENWARE

Basement

FURNITURE

Basement

HARDWARE

Basement

CANDY

Street Floor — Right

TOILET ARTICLES

Street Floor — Right

**STATIONERY and
SUPPLIES**

Street Floor — Right

TOBACCO

Street Floor — Left

**PRESSING and
LAUNDRY**

Mezzanine Floor



Harvard Coöperative Society



Meet M. I. T. Men Here

THE Technology Club has its headquarters in New York at the Allerton — 38th Street and Madison Avenue. You can always count on meeting M. I. T. men and men from other colleges at the Allerton Houses in New York, Chicago and Cleveland.

College men like the atmosphere. They like the idea back of Allerton Houses... "Live in NINE Rooms... Pay for ONE". The comfort and sociability of an exclusive club without initiation fees or dues.

You pay for your bedroom... and at one or more Allerton Houses you have the use of comfortable Lounges, Reading Rooms, Solarium, Roof Garden, Squash and Tennis Courts, Gymnasium, Exercise Rooms, Showers, Billiard Room, Indoor Golf Course, Library and Restaurants.

Stop for a night... or live at an Allerton House for economy, comfort, sociability. Select the one that suits your convenience... all will suit your purse.

Rates: \$12 to \$20 a week
Transient Rates: \$2.50, \$3.00

ALLERTON

Chicago New York Cleveland

INDUSTRY AND ENGINEERING IN THE UNION OF SOCIALIST SOVIET REPUBLICS

(Concluded from page 44)

their dealings with foreign nations, especially if by any stretch of the imagination they can construe the remark or action of a foreign power as an encroachment upon the sovereign rights of the U. S. S. R. This attitude of conscious weakness must be taken into consideration in dealing with them. It is interesting to recall the insolent notes that our State Department received from Mexico between the years 1916 and 1924 in response to its polite queries. During those years of Mexican revolution and non-recognition the struggling revolutionary government was on the defensive, and was suspicious of every move that we made. That belligerent and offensive attitude disappeared promptly when the Mexican government was recognized by the United States and diplomatic relations were resumed. Mexico was then assured that we had nothing but good will for her people. And in the same way, with the re-establishment of diplomatic relations between Great Britain and the U. S. S. R., most of the misunderstandings, as well as much of the misinformation previously current in the press of both countries, have disappeared. The new British Ambassador here is a man of broad, liberal ideas, of large understanding and tolerance, and is approaching his difficult task with an open mind.

(To be concluded in the November issue.)

A TEMPLE OF LIGHT

(Continued from page 24)

vivid and artistic limning, the descent of the Holy Spirit.

"The numbers 9 and 19 recur again and again in the structure of the temple, illustrating its basic principle of Unity — nine being the number of perfection, containing in itself the completion of each perfect number cycle, and 19 representing the Union of God and man, as manifested in life, civilization and all things."

THE construction of the ornamental surface structure may involve new materials and a new technique of construction. Studies are being made concerning the possible use of such materials as architectural concrete, terra cotta, cast iron and the aluminum alloys.

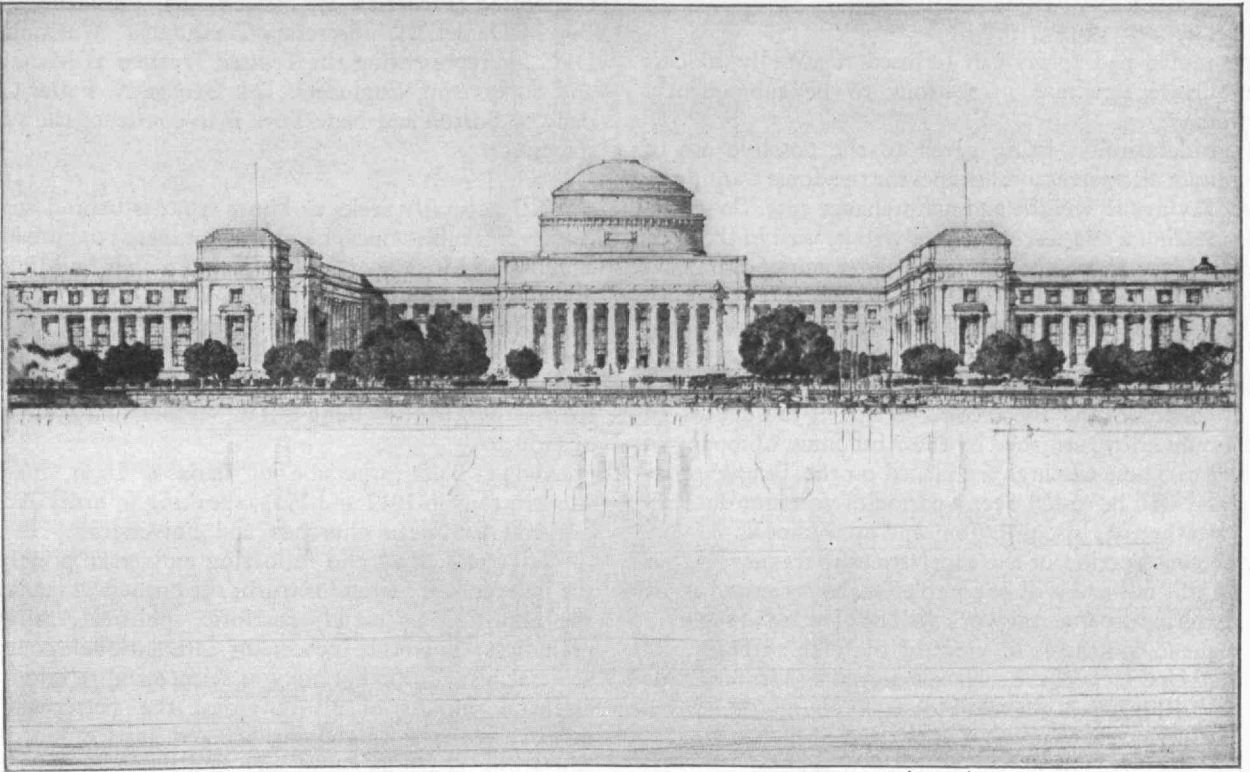
The very nature of this remarkable design precludes the use of natural stone on account of the expense of carving and lack of permanency under the severe climatic conditions that obtain at the site of the Temple. On the other hand, a plastic material such as concrete or a metal is especially adapted for this structure. Architectural concrete or cast stone would be economical as the component materials are available universally, and are relatively low in cost. As there will be a great deal of duplication of tracery and ornamentation, the (Concluded on page 48)

HAMILTON L. WOOD, '17

INSURANCE OF EVERY DESCRIPTION

Associated with

FIELD & COWLES, 40 BROAD STREET, BOSTON



♦ ANNOUNCING ♦ AN ETCHING OF M. I. T. ♦

By Louis Conrad Rosenberg

TO BE PUBLISHED EXCLUSIVELY BY THE TECHNOLOGY REVIEW ON OCTOBER 15

MR. ROSENBERG, one of the few great American etchers, and a graduate of M.I.T. ('13), has executed a plate of the Institute's Main Group of Buildings that admirably exemplifies his supremacy as an etcher of significant architectural form. Out of the one hundred and seventy-five prints that were pulled before the plate was destroyed, one hundred and fifty prints are available for sale at \$35.00 each. The size of the etching is 13" x 8" and each print is mounted with a mat, size 22" x 16½", ready for framing. Each print is signed by Mr. Rosenberg.

IMMEDIATE DELIVERY CAN BE MADE

Address inquiries or orders to THE TECHNOLOGY REVIEW, Room 11-203, M. I. T., Cambridge, Mass.

A TEMPLE OF LIGHT

(Concluded from page 46)

same molds and forms can be used repeatedly to cast the surface structure in sections to be subsequently erected.

Consideration is being given to the possible use of aluminum alloy structural shapes for the dome framing to effect savings in weight and maintenance cost. Considerable metal of a non-ferrous nature will be used in the door and window frames, and possibly in some of the ornamental window panels.

The research into materials includes the actual testing of two full size models of a 10-foot section of a dome panel; one section is made of the Earley type of architectural concrete, and the second section is molded of an aluminum alloy furnished by the Aluminum Company of America. These castings are placed on the Temple property and will be tested over a period of years for durability, weathering, discoloration, and appearance.

The construction of the superstructure framework has begun this fall and will be completed about December 31. The exterior ornamental work will be handled in separate subsequent contracts. In view of the elaborateness and unusual character of the surface material and tracery, this work will probably extend over a period of several years.

The late Mr. Louis Bourgeois of Wilmette, Ill., was the architect, Mr. Benjamin B. Shapiro of Chicago, Ill.,

the structural engineer, and The Research Service, Incorporated [Frederick H. Newell, '85, President, Allen B. McDaniel, '01, Secretary-Treasurer], Washington, D. C., is representing the Temple Trustees as Managing and Supervising Engineers. The George A. Fuller Company of Boston and New York is to construct the superstructure.

ONE naturally seeks to know what is behind such a remarkable concept and what it means to humanity. The Baha'i Movement, or Bahiism, which is building the Temple, is a religious movement, which was founded in Persia in 1844, by Mirza Alī Muhammed of Shīrāz, and has millions of adherents throughout the world at the present time. Its universal teachings were proclaimed to the world by Bahā'u'llāh, which means Glory of God.

'Abdu'l Baha', the son of Bāhā'u'llāh, made a western tour in 1912 and 1913, speaking in many American and European churches and universities. He laid special stress upon the following universal principles: the independent search for truth; the oneness of mankind; the abolition of racial, patriotic, political, religious prejudices; universal peace; an international court of arbitral justice; the harmony of science and religion; the essential oneness of all religions; the betterment of morals; economic righteousness and justice; universal education; the equality of men and women; and a universal auxiliary language.

Don't fail TO MAKE YOUR WILL



DURING the year 1929 there was 3,941 estates over \$5,000 offered for probate in Massachusetts.

Of these, 1,577 were settled according to law in the absence of a will. Such settlements seldom reflect the true wishes of the individual.

When you appoint Old Colony Trust Company as executor and trustee under your will, you are assured that your plans will be carried out as you intend.

While we do not draw wills, we will be glad to give you the benefit of our practical experience in discussing the draft of your will with you and your attorney.

Our booklet, "*Wills and Trusts*," discusses this important subject in detail. May we send you a copy?

OLD COLONY TRUST COMPANY

17 COURT STREET, BOSTON

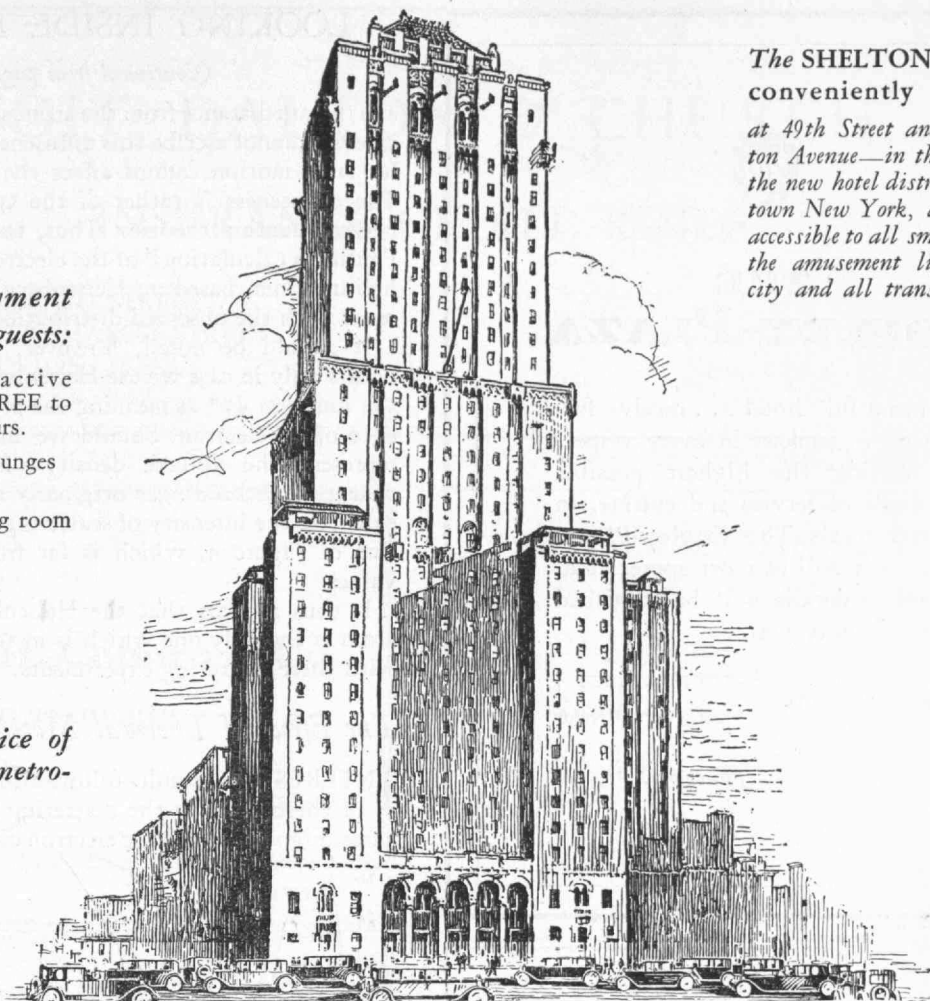
Affiliated with THE FIRST NATIONAL BANK of BOSTON

*For the enjoyment
of SHELTON guests:*

A large and attractive
swimming pool—FREE to
all guests at all hours.

Four comfortable lounges
Game rooms
Library and reading room
Solarium
Roof garden
Gymnasium
Billiard room
Bowling alleys
Squash courts

*and every service of
a first class metro-
politan hotel.*



*The SHELTON is most
conveniently located
at 49th Street and Lexing-
ton Avenue—in the center of
the new hotel district of mid-
town New York, and easily
accessible to all smart shops,
the amusement life of the
city and all transportation.*

The SHELTON

New York's hotel rendezvous
—for TECH MEN
and their families

A UNIQUE, club-like atmos-
phere most unusual to find in
a metropolitan hotel. Where vis-
itors to the city may enjoy them-
selves as much as though they
were guests of a large private club.

Yet in spite of its many extra at-
tractions the room charges are no
higher than you have to pay in
other high class hotels where the
most you can expect is the ordinary
“room and bath.”

\$3 to \$6 a day for one; \$6 to \$9 a day for two

PLEASE MAKE RESERVATIONS IN ADVANCE if possible so that we
will be sure to have the accommodations you want when you arrive.
Address Manager, SHELTON, 49th and Lexington, New York.



THE COPLEY-PLAZA

A beautiful hotel . . . nicely furnished . . . modern in every respect . . . offering the highest possible standards of service and cuisine. In Boston — it's The Copley-Plaza. Your visit will be most appreciated. Complete details will be furnished gladly upon request.

ARTHUR L. RACE
Managing Director

When in Boston — The Copley-Plaza

JOHN HANCOCK SERIES

Can she wait for the courts to decide?

IN the event of your death, the transfer of your funds or property involving your signature must be handled through the courts. Has your wife the ready cash to live on for an indefinite period, to say nothing of taking care of certain inevitable expenses, and other pressing obligations?

A way to prevent the sacrifice of some of the valuable holdings in your estate is to provide a fund, immediately available through a John Hancock life insurance policy, sufficient to cover all contingencies.

John Hancock
MUTUAL
LIFE INSURANCE COMPANY

OF BOSTON, MASSACHUSETTS
Inquiry Bureau, 197 Clarendon Street
Boston, Mass.

Please send booklet, "This Matter of Success."

Name.....

Address.....

A.G.

OVER SIXTY-SEVEN YEARS IN BUSINESS

LOOKING INSIDE THE ATOM

(Continued from page 21)

at a certain distance from the atom's center. In the present case we cannot ascribe this diffuseness to thermal motion, for such motion cannot affect the scattering by gases. The diffuseness is rather of the type predicted by the newer quantum theories. Thus, the broken line shows Pauling's calculation¹⁴ of the electron distribution in the helium atom, based on Heisenberg's theory. The agreement with the observed distribution is striking.

It should be noted, however, that this agreement occurs only in case we use Heisenberg's interpretation of the function $\psi\psi^*$ as meaning the probability of the presence of an electron. Should we instead assume $\psi\psi^*$ to represent the volume density of continuous electric charge, as Schrödinger originally supposed, we should calculate the intensity of scattering shown by the dotted line of Figure 4, which is far from the experimental values.

It thus appears that the Heisenberg form of helium atom is the only one which is in satisfactory agreement with these scattering experiments.

The Effect of Thermal Motion

INTERESTING results follow also from the application of these ideas to the scattering of x-rays by heavier gases. Figure 6 shows the electron distribution in argon as

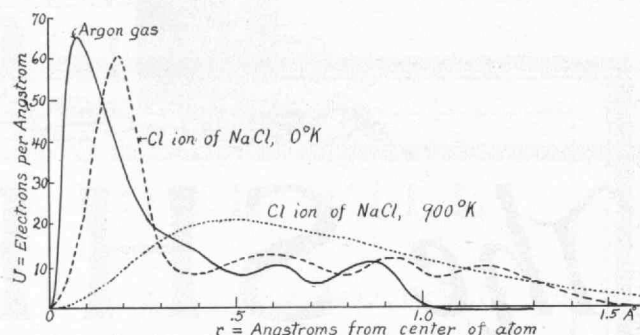


FIGURE 6

Electron distribution curves showing the effect of thermal agitation and zero point energy on the positions of electrons in crystal lattices.

calculated from a combination of the data obtained by Barrett¹⁵ and by Herzog.¹⁶ For comparison there is shown in the same figure the electron distribution in the Cl ion of rock salt as determined¹⁷ for the absolute zero (broken line) and at a temperature approaching the melting point (dotted line). Except for small effects which may be due to experimental error, since chlorine and argon differ in atomic number by only one, the differences between these three curves is presumably that resulting from thermal motion. For the solid line this motion plays no part. For the broken line it is chiefly the zero (Concluded on page 52)

ASHBURNHAM SCHOOL FOR BOYS

9 to 16 years of age. Handwork, music, nature study, sailing, horseback riding, real country life all used in a modern way in the boy's education. Summer Camp.

Address HARRY ROBINSON DANE, Headmaster
Box V, Ashburnham, Massachusetts

BOIT, DALTON & CHURCH

INSURANCE OF ALL KINDS

89 BROAD STREET
60 BATTERYMARCH STREET
BOSTON, MASS.

149 WILLIAM STREET
NEW YORK, N. Y.

William H. Coburn & Co. Investments

68 Devonshire St.

Boston, Mass.

MERRIMAC CHEMICAL CO.

148 STATE STREET

BOSTON, MASSACHUSETTS

WORKS AT

WOBURN AND EVERETT, MASSACHUSETTS

*THE largest and oldest chemical concern
in New England*

FOUNDED
IN 1853

ROTOGRAVURE ▼ PRINTING ▼

A Complete Rotogravure Department, the first installation in New England by a commercial printing firm, is now in full operation at our plant. This new department is equipped to produce ROTOGRAVURE PRINTING in any desired form and quantity. A complete service, including photography, art work and copy writing, is available. It is our intention to produce ROTOGRAVURE PRINTING of quality comparable to that of our book, catalog and general commercial printing.

THE MURRAY PRINTING COMPANY
KENDALL SQUARE · CAMBRIDGE

TELEPHONE **5650** UNIVERSITY

Bank Stocks

*Specific Suggestions
on Request*

Insurance Stocks

J. Murray Walker & Co.
INCORPORATED

Shawmut Bank Building, Boston
Hubbard 7968

New England Coal & Coke Co.

"The House of Service"

NEW RIVER POCAHONTAS

• COALS •

STOKER and SLACK for Powdered Fuel
Plants and Automatic Stokers

250 STUART STREET BOSTON, MASS.

THE RUMFORD PRESS

Concord, New Hampshire

1 1 1

*Makers of Magazines and Books
of Distinction*

HARVARD PRINTING PLATES HARVARD ENGRAVING CO.

ENGRAVERS ILLUSTRATORS

72 LINCOLN ST., COR. ESSEX ST.

BURTON-FURBER COAL CO.

Associated with BATCHELDER WHITTEMORE COAL CO.

Selected Grades

ANTHRACITE AND BITUMINOUS

10 High Street
BOSTON

HUBbard 3100

LOOKING INSIDE THE ATOM

(Concluded from page 50)

point motion that is effective, and for the dotted line we have both the zero point motion and the thermal motion. The effect of the thermal motion is clearly apparent, and it would seem that the presence of a zero point motion is also indicated. Before this can be considered established, however, it will be necessary to obtain more reliable data on the scattering by argon gas.

We may accordingly say with some confidence that the aspect of the problem of atomic structure which is concerned with the distribution of the electrons in atoms is finding a satisfactory solution. It is a relief to note that a theory is at hand which affords a reasonable interpretation of the experimental electron distributions.

In 1922, having experiments of this character in mind, I had the temerity to predict¹⁸ that within ten years the electron positions in the lighter atoms would probably be known as reliably as were at that time the positions of the atoms in certain crystals. I believe that prediction is now verified. For this information regarding electron positions in atoms is based upon precisely the same principles as is, for example, our information regarding the position of the oxygen atoms in a calcite lattice.

I suppose it would be fair to say that experiments such as these come the closest of any yet performed to showing us "what the atom looks like." For after all is not seeing an object a diffraction phenomenon similar to those under discussion? When we thus "look" at the atom of helium we find it, as illustrated in figures 5 and 6 and by the photograph on page 19, composed of a diffuse electron cloud, concentrated near the center of the atom.

¹ E. A. Owen, *Proc. Camb. Phil. Soc.* 16, 165 (1911)

² J. A. Crowther, *Proc. Camb. Phil. Soc.* 16, 367 (1911)
Proc. Roy. Soc., 86, 478 (1912)

³ D. L. Webster, *Phil. Mag.* 25, 234 (1913)

⁴ C. G. Darwin, *Phil. Mag.* 27, 315 (1914)

⁵ P. Debye, *Ann. d. Phys.* 46, 809 (1915)

⁶ A. H. Compton, *Nature*, May 27, 1915; *Phys. Rev.* 9, 29 (1917)

W. H. Bragg, *Phil. Trans. A.* 215, 253 (July, 1915)

⁷ A. H. Compton, *Phys. Rev.* 10, 95 (1917)

⁸ W. L. Bragg, James and Bosanquet, *Phil. Mag.* 41, 309 (1921)

⁹ W. H. Bragg, *Proc. Phys. Soc. London*, 33, 222 (1921)

¹⁰ W. Duane, *Proc. Nat. Acad. Sci.*, 11, 489 (1925)

¹¹ A. H. Compton, "X-rays and Electrons," Chap. V (1926)

¹² A. H. Compton, *Phys. Rev.* 35, 925 (1930)

¹³ C. S. Barrett, *Phys. Rev.* 32, 22 (1928)

¹⁴ L. Pauling, *Proc. Roy. Soc. A*, 114, 181 (1927)

¹⁵ C. S. Barrett, *loc. cit.*

¹⁶ G. Herzog, *Helv. Phys. Acta.* 2, 217 (1929)

¹⁷ James and Firth, *Proc. Roy. Soc. A*, 117, 62 (1927)

¹⁸ A. H. Compton, *Bull. Nat. Res. Council* No. 20 (1922)

CHASE & GILBERT

ENGINEERS and BUILDERS

Park Square Building

Boston, Massachusetts

We are prepared to make reports on,
to design and to build—

HYDRO-ELECTRIC PLANTS

STEAM POWER PLANTS

INDUSTRIAL PLANTS

TUNNELS

DAMS

BRIDGES

Royce W. Gilbert, '09



PREPARATORY SCHOOLS



BLAIR ACADEMY

A school for 300 boys. 65 Miles from New York. Graduates in leading eastern colleges. Thorough college preparation. Six-year course. Excellent equipment. 310 Acres. Gymnasium. Pool. Golf Course.

CHARLES H. BREED, Ed.D., Box H, Blairstown, N. J.

CHESTNUT HILL

Excellent college record due to the devotion and skill of experienced masters from the leading universities. Each boy is studied individually. Complete campus and equipment. In the open country near Philadelphia. Address: Acting Headmaster, GILBERT H. FALL, Box T, Chestnut Hill, Pa.

FRANKLIN AND MARSHALL ACADEMY

A Widely Recognized, Moderately Priced, Preparatory School. Wholesome School Life and Sports. Unusual Equipment and Location. 1200 Boys prepared for college in the last 30 years.

E. M. HARTMAN, Pd.D., Principal, Box 450, Lancaster, Pa.

HEBRON ACADEMY

The Maine School for Boys. A College preparatory school of high standing. Graduates in 22 Colleges. Strong Faculty of thirteen men. Athletics for all. Finest school skating rink in America. Fine dormitories for all.

RALPH L. HUNT, Principal, Hebron, Maine

HUNTINGTON SCHOOL FOR BOYS

Five Forms. Special two-year course for entrance to M. I. T. Summer Session Send for catalogue

CHARLES H. SAMPSON, Ed.M., Headmaster

320 Huntington Ave., Boston

Tel. Kenmore 5800

THE MANLIUS SCHOOL

Manlius, N. Y.

Preparation for college by certificate or College Entrance Board examinations. Well rounded manhood through scholarship, athletics, and military training.

GENERAL WILLIAM VERBECK, President, Box M, Manlius, N. Y.

MANter HALL SCHOOL

71 Mt. Auburn Street, Cambridge, Mass.

Founded in 1886. Intensive Preparation for College Entrance. New dormitory accommodations. Staff of well-known specialists with years of successful experience.

THE MILFORD SCHOOL

Formerly THE ROSENBAUM SCHOOL, MILFORD, CONN.

Preparation for College Board Examinations. Boys admitted whenever vacancies occur. *Catalogue on request.*

MOSES BROWN SCHOOL

An Endowed New England School with an excellent record in preparing boys for leading colleges. 25-acre elm-shaded campus. Athletic Fields. Gymnasium. Swimming Pool. *For Illustrated Catalog Address:*

L. RALSTON THOMAS, Headmaster, 257-A Hope Street, Providence, R. I.

NEW HAMPTON

109th year. A New Hampshire School for Boys Six Modern Buildings. Thorough College Preparation. Intensive Course in Business. Athletics for Every Boy. Moderate Tuition. *Address*

FREDERICK SMITH, A.M., Box 198, New Hampton, N. H.

NORTHWOOD SCHOOL

In the heart of the Adirondacks. Under Lake Placid Club Education Foundation. Unusual success in college preparation. Emphasis on recreation that can be continued thruout life. Winter sports. Separate junior school for boys, 8 to 12.

IRA A. FLINNER, Ed.D., Director, Box T, Lake Placid Club, N. Y.

RIVERDALE

A Country School for Boys. Well-balanced program. One of the best college board records. Athletics. Student activities. Fire-proof dormitory. 24th year. *For catalogue address*

FRANK S. HACKETT, Headmaster, Riverdale-on-Hudson, N. Y.

ROXBURY SCHOOL

CHESHIRE, CONNECTICUT

Roxbury combines the advantages of thorough scholastic training by small group instruction with those of organized school discipline.

A. N. SHERIFF, Headmaster

ST. JOHN'S PREPARATORY SCHOOL

DANVERS, MASS.

A Country School, Eighteen Miles from Boston. Preparing Catholic Boys for College and Technical School. Every Modern Facility for Student Life. *For catalog or personal interview*

Write to PRINCIPAL: St. John's Preparatory School, Danvers, Mass.

STEARNS for Boys

Preparation for Colleges and Scientific Schools. Rapid advancement. In New Hampshire Hills. Year-round indoor and outdoor sports. Lower School. Catalog.

A. F. STEARNS, Principal, Box 59, Mt. Vernon, New Hampshire

STORM KING

On the spur of the Storm King Mountain, 900 feet above the Hudson River. Fifty-three miles from New York City. Complete preparation for college or technical school. Athletics for all boys.

R. J. SHORTLIDGE, Headmaster, Cornwall-on-Hudson, New York

THAYER ACADEMY

Every year the Academy sends a group of students to Technology. Recognized by Technology alumni as an exceptionally good fitting school. Both day and boarding pupils accepted. *For catalogue address*

STACY B. SOUTHWORTH, Headmaster, South Braintree, Massachusetts

TILTON SCHOOL

Prepares thoroughly for Technical Institutions and Colleges. Well endowed, moderate rates, excellent facilities. Separate Junior School. 2½ Hours from Boston. 84th Year. Correspondence and inspection invited. Catalogue. T. W. WATKINS, Headmaster, Tilton, N. H.

WILLISTON ACADEMY

An endowed school for boys whose parents desire the best in education and care at a reasonable cost. Preparation for all colleges.

Junior School for young boys. *Address*

ARCHIBALD V. GALBRAITH, Principal, Box T, Easthampton, Massachusetts

WORCESTER ACADEMY

SAMUEL F. HOLMES, Headmaster

GEORGE D. CHURCH, Registrar

96th Year. 250 Boys. \$1000-\$1200. Unusually well equipped for Science and Mathematics. Kingsley Laboratory exclusively devoted to these two departments. *Write for descriptive catalogue*—Station 125, Worcester, Mass.

CHAUNCY HALL SCHOOL

Founded 1828. The School that confines itself exclusively to the preparation of students for the Massachusetts Institute of Technology.

FRANKLIN T. KURT, *Principal*, 553 Boylston Street, Boston, Mass.

THE POND SCHOOL

Separate Instruction of Each Student. Supervised Study under Instructors. Training in the most effective Methods of Study and Concentration. Rapid and Thorough Preparation for College. W. McD. POND, Headmaster, 42 Quincy Street, Cambridge, Mass. Porter 1971

MONSON ACADEMY

An Endowed School in Its 27th Year. For Boys Who Are Going to College. Small Classes. Experienced Instructors. Thorough Drill in Fundamentals. *For Catalog Address*

BERTRAM A. STROHMEIER, A.M., Headmaster,
Box T, Monson (In Central Massachusetts)

PILES FOUNDATIONS CAISSONS
FOUNDATION & CONSTRUCTION CO.
108 Massachusetts Avenue
Boston, Mass.
Telephone Kenmore 6868 - 6869 Philadelphia office 1320 Race St.
ALL KINDS OF FOUNDATION WORK



BUFF Transits and Levels

are used on the largest work where utmost precision is required. *New catalog just issued.*

BUFF & BUFF CO. Boston 30, Mass.
How to adjust a Transit—Free pamphlet
Corner 98 Green St., Jamaica Plain, Boston

Charles F. Tancred

IN CHARGE OF
CLASS OF 1928 ENDOWMENT

MUTUAL LIFE INSURANCE COMPANY OF NEW YORK
31 Milk Street, Boston, Mass.

FREDERICK BERNARD, '17

Special Agent

NORTHWESTERN MUTUAL LIFE INSURANCE CO.

235 PARK SQUARE BUILDING BOSTON, MASS.

CHARLES H. JOHNSON

M. I. T., '05

New England Mutual Life Insurance Company

80 FEDERAL STREET Liberty 0553 BOSTON, MASS.

SAVING COAL BY SCIENCE

(Concluded from page 18)

The work at the Institute of Technology has thus been in progress for some eight years and promises to continue for a few years. Dr. Leighton B. Smith, Assistant Professor of Physico-Chemical research, has been associated with the Institute's portion of the program during the entire period of patience-trying experimentation.

At the Berlin meeting Great Britain, Germany, Czechoslovakia, and the United States were represented — the American delegates to the Conference being sent by the A. S. M. E. Research Committee. The program adopted has been to establish a network of fixed points in the saturated and superheated region of steam, at each of which a value has been agreed upon and also a "tolerance" or measure of uncertainty in the values adopted by the international conference. The result is not a steam table but a skeleton of such a table having international indorsement.

The great value of the agreement reached at Berlin, relates to the expectation that the internationally agreed-upon points will be periodically revised. The Berlin conference disclosed in general an astonishing degree of concordance between the various experimental values proposed; both with respect to the direct experimental data and computed quantities obtained by applying the two principles of thermodynamics. A third conference will probably not be required before 1935.

The Economic Values

IN 1921 the available data on steam did not exceed that obtainable below 200 lbs. per square inch. In December 1923, the new experimental work had been extended to 600 lbs. per square inch and 650° F.; while in 1924, the first steam turbine operating at 600 lbs. per square inch was placed in operation. By 1925, the first 1,000-lb. turbine was operated, and in the same year the first tentative chart prepared by the Engineers of the General Electric Company was prepared with the new data as a basis. The chart extended to 1,200 lbs. and 800° F. The first 1,200-lb. turbine was placed in service in 1926. The value of the new data, now published in the form of tables, is evident since there are now in operation or under construction over half a million kilowatts in turbine generator sets operating at 1,200 lbs. pressure. (March 1930.)

It may be imagined that an advance of this economic importance might have been taken without knowledge of the advantages to be gained or the capacities which would result, provided the purchasers of machines would take the risk. Without attempting to debate such a proposition, the fact is that as a consequence of the new investigations each step in high pressure steam utilization has been taken with entire assurance that the results obtained would be realized with accuracy.

Who can place a money value on the value of definite knowledge that results will be realized as expected? In any event it is certain that had accurate scientific data not been available and estimates been erratic, the sound progress of the industries now profiting by the economies possible with the use of high pressure steam would have received setbacks representing great economic losses.



PROFESSIONAL CARDS



JACKSON & MORELAND

Consulting Engineers

31 ST. JAMES AVENUE

BOSTON, MASS.

H. K. BARROWS, '95

M. Am. Soc. C.E.

CONSULTING HYDRAULIC ENGINEER

Hydro-electric developments — Water supplies. Reports, plans, supervision. Advice, appraisals.

6 BEACON STREET

BOSTON, MASS.

EADIE, FREUND AND CAMPBELL

CONSULTING ENGINEERS

110 WEST FORTIETH STREET

NEW YORK CITY

PLANS AND SPECIFICATIONS — EXAMINATIONS AND REPORTS
Power, Heating, Ventilating, Electric, Plumbing, Sprinkler, Refrigerating, Elevator Installations, etc., in Buildings and Industrial Plants

J. K. CAMPBELL, M. I. T. '11

METCALF & EDDY, ENGINEERS

HARRISON P. EDDY
CHARLES W. SHERMAN, '90
ALMON L. FALES
FRANK A. MARSTONJOHN P. WENTWORTH, '10
HARRISON P. EDDY, JR., '17
ARTHUR L. SHAW, '09
E. SHERMAN CHASE, '06*Water, Sewage, Drainage, Refuse and Industrial Waste Problems
Laboratory*

STATLER BUILDING

BOSTON, MASS.

THOMAS B. BOOTH, '95

AMASA M. HOLCOMBE, '04

JOSEPH Y. HOUGHTON, '26

Emery, Booth, Varney, and Townsend 50 Congress St., Boston

Emery, Booth, Varney, and Whittemore 60 E. 42nd St., New York

Emery, Booth, Varney, and Holcombe 900 F St., Washington

PATENT LAWYERS

MAURICE A. REIDY

Consulting Engineer

STRUCTURAL DESIGNS

FOUNDATIONS

CONSTRUCTION CONSULTANT AND ADVISOR

Estimates and Appraisals

44 SCHOOL STREET

BOSTON, MASS.

Merton L. Emerson

Management Engineer
Associated with

Scovell, Wellington & Company

Accountants — Engineers

BOSTON

NEW YORK

CHICAGO

FAY, SPOFFORD & THORNDIKE

ENGINEERS

BOSTON, MASS.

BRIDGES

WATER SUPPLY AND SEWERAGE

PORT AND TERMINAL WORKS

FIRE PREVENTION

INVESTIGATIONS

DESIGNS

SUPERVISION OF CONSTRUCTION

STANLEY G. H. FITCH '00

CERTIFIED PUBLIC ACCOUNTANT

of PATTERSON, TEELE & DENNIS
1 Federal Street, Boston, Mass.

AUDITS

INVESTIGATIONS

New York

Boston

Washington

Baltimore

CHAS. T. MAIN, INC.

ENGINEERS

*Industrial Buildings, Electrical, Steam and Hydraulic Engineering
Valuations and Reports, Consulting Engineering*

201 Devonshire Street

Boston, Mass.

ARCHIBALD H. SPAULDING, '14

PHILIP B. TERRY, '13

SPAULDING-MOSS COMPANY

*Blue Prints**Photostat Prints**Planograph Prints*

BOSTON: LIBerty 3000

SPRINGFIELD: Dial 2-3000

BIGELOW, KENT, WILLARD & Co.

INCORPORATED

CONSULTING ENGINEERS AND ACCOUNTANTS

Merchandising Counselors

PARK SQUARE BUILDING, BOSTON, MASSACHUSETTS

John A. Willard, '09, Treas.

FREDERICK H. UNTIEDT

Patent Lawyer

ESPECIAL EXPERIENCE IN CHEMICAL MATTERS

National Press Building

Washington, D. C.

George W. Fuller
J. R. McClintockFULLER & MCCLINTOCK
ENGINEERSF. G. Cunningham
C. A. Emerson, Jr.

NEW YORK — 170 Broadway

PHILADELPHIA — 42 South 15th Street

Water Supply and Water Purification
Sewerage and Sewage Disposal
Disposal of Industrial WastesInvestigation of Epidemics
Garbage Collection and Disposal
Valuations of Public Utilities

Paul L. Cumings, '07

Alfred Lo Cascio

E. Stanley Wires, '07

E. STANLEY WIRES CO., INC.

TILE ROOFING

TILING

FIREPLACES

Toeb Bros. R. I. W. Paints Mende's Nalcocde

120 BOYLSTON STREET

BOSTON, MASSACHUSETTS

C. C. HOCKLEY

Consulting Engineer

DESIGN, CONSTRUCTION and OPERATION

PULP and PAPER MILLS

POWER PLANTS

NORTHWESTERN BANK BUILDING

PORTLAND, OREGON

DIVISION OF INDUSTRIAL COÖPERATION & RESEARCH

RESEARCH

THROUGH this Division the equipment of the Institute Laboratories and the experience of its staff members are made available to a limited extent for the study of industrial research problems.

There are excellent facilities available for research in Physics, Chemistry, Biology, Metallurgy, and the principal branches of Engineering.

Inquiries regarding the service should be addressed to the Division.

PERSONNEL

THE Division maintains a list of graduates, with records of their experience and special qualifications for engineering and technical work. A list is kept of positions open.

Alumni are urged to report promptly changes of address, or changes of business connections. Officers of local Technology Clubs and Class Secretaries are urged to acquaint the Department with information which may come to their notice of Alumni interested to make new connections, or of positions open.

Address communications to Personnel Department.

DIVISION OF INDUSTRIAL COÖPERATION & RESEARCH

MASSACHUSETTS INSTITUTE *of* TECHNOLOGY • CAMBRIDGE



ADVERSARIA



Conferred

¶ On KARL T. COMPTON, after his inauguration as President of the Institute the following degrees: Doctor of Science from Princeton University; Doctor of Laws from Harvard University; and Doctor of Engineering from the Polytechnic Institute of Brooklyn. To his name now may be added the following: Ph.B., Sc.M., Ph.D., Sc.D. (thrice), D.Eng., LL.D.

¶ On NATHAN C. GROVER '96, the degree of Doctor of Engineering by the University of Maine.

¶ On WILLIAM Z. RIPLEY '90, an honorary LL.D., at the 77th Commencement of the University of Wisconsin.

Honored

¶ HARRY E. CLIFFORD '86, by being chosen Dean of the Harvard Engineering School to succeed the late Hector J. Hughes who died on March 1. Mr. Clifford was elected by the Board of Overseers of Harvard College at their last meeting of the current academic year. He served from 1895 to 1909 as an assistant, associate, and full professor at Technology. From 1909 to the present time he has been a professor in the Harvard Engineering School, and in February of this year, when Dean Hughes left on sabbatical leave, Professor Clifford became acting dean, a position which he has held until his election as Dean. He is a Fellow of the American Academy of Arts, the American Association for the Advancement of Science, the American Institute of Electrical Engineers, of which he is a past chairman of the New England branch, and the Illuminating Engineering Society.

Awarded

¶ To LAWRENCE B. ANDERSON '30, the annual Paris Prize by the Society of Beaux Arts Architects (Alumni of the École des Beaux Arts). The second place likewise went to a Technology man, GEORGE E. BRENNAN '30. The Paris Prize award which is made every year, has been won three times out of the past four years by students under the patronage of Professor Carlu. DONALD S. NELSON '26 won it two years ago, and last year JOSEPH D. MURPHY '29 was given the award. The Paris Prize is the most coveted award offered to an American architectural student. It permits him to enter the École des Beaux Arts without examination and finances a course of study there for two and a half years.

¶ To IRVING FINEMAN '17, the \$7,500 prize in the Longmans Green and Company first novel contest. A thousand manuscripts were submitted. Mr. Fineman's

"This Pure Young Man" is a study of the conflict of sensitive youth with the modern world.

Written

¶ By GARDNER T. VOORHEES '90, an important book on refrigeration.

¶ By SETH K. HUMPHREY '98, "The Prairie Frontier," a book which contains much of personal experience and almost direct knowledge since his parents were pioneers beyond the Mississippi. This book was recently accepted for publication by the University of Wisconsin Press, with the statement that they consider it a valuable contribution to the history of the West.

Bequest

¶ By WILLIAM E. NICKERSON '76, of the remainder and residue of his property to accumulate for 20 years or until it reaches \$1,000,000 when it is to be distributed equally between Technology and Boston University.

¶ By HORACE T. SMITH '98, of \$50,000 to Technology which is to be used for scholarships for worthy students, preference being given first to graduates of the East Bridgewater (Mass.) High School, and next to the Bridgeport (Conn.) High School.

Donated

¶ PIERRE S. DUPONT '90, half the cost of a \$1,000,000 modern school house to be erected on a site adjacent to the house of Bayard Taylor who once had so little money that when he wanted to tour Europe, he had to go on foot. Mr. duPont has already given \$12,000,000 for the erection of public buildings and the construction of public highways in Delaware.

¶ GEORGE EASTMAN, generous benefactor of Technology, the sum of \$1,000,000 to the Italian Government for the erection of a clinic and college in Rome.

Won

¶ WALTER K. SHAW '88, the famous Puritan Cup in the annual regatta of the Eastern Yacht Club off Marblehead on July 4, with his sloop *Andiamo*.

¶ PAUL F. JOHNSON '98, the \$1,000 Lipton trophy for the 1930 ocean cruising race from Long Beach, Calif., to San Francisco. The *Seyelyn*, Mr. Johnson's 82-foot power cruiser, was the largest of all the boats in the race.

Elected

¶ GEORGE B. HAVEN '94, to the Executive Committee of the United States Institute for Textile Research until

November 6. This Executive Committee is to develop a definite program of fundamental research.

¶ HERBERT J. BALL '06, Chairman of the Textile Committee of the American Society for Testing Materials. This Textile Committee comprises representatives of nationally known producers and consumers of textile yarns and fabrics. Their purpose is to prepare standard methods of testing them. The Committee meets three times a year, once in the North, once in the South, and once at Atlantic City.

¶ RAYMOND W. CUSHMAN '16, of Jacksonville, Fla., a member of the legislative group of the State Chamber of Commerce's aviation committee. This committee plans to present a program for the uniform and systematic marking of airways of the state.

Spoke

¶ FRED W. DRAPER '95, of Mount Isa Mines, Ltd., Queensland, Australia, before the Mining and Metallurgy Association of the Missouri School of Mines on March 18.

¶ SAMUEL C. LIND '02, ROBERT T. HASLAM '11, GEORGE THOMSON '21, ROBERT P. RUSSELL '22, RAYMOND REUTER '23, JOHN M. CAMPBELL '24, and WHEELER G. LOVELL '24, at a meeting of the American Chemical Society at Cincinnati in early September.

Opinions

¶ ELISHA WALKER '02, Chairman of the Transamerica Corporation, claims that branch banking, if extensively established, will be a remedial measure for bank failures. There were 5,000 bank failures occurring in the United States between 1920 and 1929. "This extension of branches," he states, "could further the creation of banks in the interior of the country and in the west and south big enough to handle some — perhaps a considerable portion — of the business that now inevitably gravitates to New York."

¶ CLAIR E. TURNER '17, professor of biology at Technology, claims that the diet of the old Hawaiians, which consisted wholly of fish, vegetables, and native food poi, was much superior to that of the native Hawaiians today. Professor Turner spent a month or more in Hawaii this past summer lecturing.

Note on Technology's Colors

¶ CHARLES R. FLETCHER '76 comments upon their origin: "We poor fellows of '76 had to go through the mill, all right; but we lived through it all right; at least most of us lived; some didn't: and

we went in with 146 and came through with 32, I believe. It fell to my lot to select Technology's two colors; cardinal red to denote American red blood, and Douglas gray, to denote faith, stability, and confidence. I confess that I worked in the gray because my ancestry was one-half Douglas-of-Tantallon, Scotland, and the history of old Earl of Douglas was effective and admirable. The Class of '76 wore the colors to the Philadelphia Centennial in 1876 and thus established them forever.

"The Committee of the Class of '76 to select the colors were, I think, five of us. As I went down town every afternoon en route home, I was shoved into doing all the work, but did it; and got every color of the rainbow, silk, cotton, satin, and so on, and we all agreed upon the brightest, the blood red of the northern New York cardinal flower — cardinal red. Then, somehow, I wanted the Douglas gray too, and suggested, as several did, two colors. Finally by earnest talking we succeeded in impressing the Douglas gray along with cardinal red, and it was accepted."

Deaths

☛ Reports have come to The Review, since the last issue, of the decease of the following:

☛ ROBERT A. SHAILER '73, on July 7, at the Engineers Club in New York after a two weeks' illness. Mr. Shailer was the chief engineer on the construction of the East Boston tunnel, the Scollay Square and Haymarket Square subways, and consulting engineer during the construction of the Cambridge subway. He was President and chief engineer of the Shailer-Schnigla Corporation and of the Boston Tunnel Construction Company. In New York he acted as chief engineer of the construction of several subways including the Queensboro Tunnel and the rapid transit tube. Last year he was the guest of the Soviet Government while advising on a possible subway in Moscow.

☛ WALTER H. PLIMPTON '77, on January 19, at his home in San Diego, Calif., after an illness of about two years.

☛ FRANKLIN V. STRICKLAND '82, on April 13, at his home in Bangor, Maine. After finishing his course at Technology, he was connected for many years with the Union Iron Works, Inc., of Bangor, holding the position as general superintendent and later as Secretary. About four years ago he resigned this office and retired from business.

☛ ALEXANDER S. JENNEY '83, on August 17, at his home in Brookline, Mass. Mr. Jenney was widely known in the architectural field, beginning his professional work in the office of H. H. Richardson. He later became a member of the office staff of McKim, Mead and White, working for eight years under Mr. McKim on

plans for the Boston Public Library. In 1891 he went to Europe with Mr. McKim and Samuel A. B. Abbott, President of the Library Trustees, in the interests of the Library. For three years Mr. Jenney taught in the Architectural Department at Harvard, and for the past 15 years was a member of the Faculty at Technology, resigning a year ago last June on account of ill health. He was a member of the Boston Society of Architects and the American Institute of Architects. He lived for 20 years in Weston, Mass., where he was the architect of the town library.

☛ ALLEN HAZEN '88, on July 26, at Miles City, Mont., of a heart attack while on a vacation trip with his daughter. Mr. Hazen was an outstanding authority on hydraulics, water supply, and sewage disposal. Through his basic studies in water supply and filtration he became a leader of thought in hydraulic and sanitary engineering. He constructed the first slow sand filter plant with continuous filtration in the United States. He was the author of numerous books on subjects relating to his chosen profession and took an active part in the affairs of the American Society of Civil Engineers.

☛ GUY W. CURRIER '88, on June 21, at his summer home in Peterboro, N. H. He was one of the most noted lawyers of the Massachusetts Bar. Since 1922 he was a member of the board of trustees of the Boston Public Library and chairman of the Boston Port Authority. He served in the Massachusetts House of Representatives and Senate from 1899 to 1902. He was a member of the Algonquin, Eastern Yacht, Engineers, and University Clubs of Boston, and of The Technology Club of New York. His death was attributed to a heart attack which came over him while at his office in Boston two weeks before he died.

☛ JOHN DEARBORN '88, with this class for one year, on June 6.

☛ SARAH EFFIE SMITH '90, on November 18, 1929. Miss Smith was a professor at Mount Holyoke College.

☛ The Secretary of '95 reports the following deaths not previously reported: GEORGE M. HOLMAN, on January 6, 1930, and J. HARLESTON PARKER on May 5.

☛ BERTRAND J. CLERGUE '95, on March 28, while in Montreal en route to France. He was President of the Waterbury Tool Company in Waterbury, Conn. In his professional work the machinery designed for the air mast at St. Hubert, Montreal, and the cables on the Hudson River Bridge are outstanding monuments to his memory. He developed a weakness of the heart which finally provoked his early death.

☛ BENJAMIN HURD '96, on August 8, at New Bedford, Mass. A more detailed account of Mr. Hurd's career will appear in a later issue of The Review.

☛ J. WILLIAM NAGLE '96, on July 31, at Forest Hills, Mass. After leaving Technology, he studied dentistry at Tufts

Dental School and became a prominent member of the profession in Back Bay. Dr. Nagle was a past grand knight of the Boston Council, Knights of Columbus, and a charter member of the St. Apollonia Guild. He was also a member of the Massachusetts Dental Society.

☛ HORACE T. SMITH '98, on July 17, at Bridgeport, Conn.

☛ OWEN L. LEONARD '98, on March 7, in Denver, Colo. He had been associated with the Telephone Company in that city.

☛ ROBERT E. DALY '98, on April 19, in Brooklyn, N. Y., where he practiced dentistry for many years.

☛ The Secretary of '99 reports the following deaths not previously reported: JAMES F. CHAPMAN, on April 16, 1929, killed in an automobile accident in Pueblo, Colo., and EDWARD G. HENRICH on January 27, 1930, in Buffalo, N. Y.

☛ GEORGE B. FORD '00, on August 13, in New York City. Mr. Ford received his S.B. from Technology in 1900 and his M.S. in 1901, after which he studied at the École des Beaux Arts in Paris from 1903 to 1907. In 1910 he was appointed United States delegate to the International Housing Congress in Vienna, and upon his return he resumed his work with a firm of architects in New York. Still later he became adviser to the Russell Sage Foundation Plan of New York and vicinity. He served as city planner in many cities and towns, including Somerville, Worcester, Springfield, New Bedford, and others. He had acted as consultant engineer to more than 100 city planning commissions in 30 American cities. During the war and afterward, he assisted the French Government in planning the rebuilding of Rheims, Soissons, and other devastated cities. For his work in this capacity he was decorated with the French Legion of Honor. He was a member of the American Industrial Commission to France in 1917 and deputy commissioner of the American Red Cross in France that same year. For the past five months he was director of the regional planning association in New York. He was author of "City Planning Progress," "Out of the Ruins," and other books. He was President of both the American City Planning Institute and of the Congress Interallie d'Urbanisme. (See Trend of Affairs section in this issue.)

☛ FRANK E. DIXON '06, on July 27, in Cleveland. He was Vice-President of the Falls Rubber Company in Cuyahoga Falls, Ohio. Mr. Dixon had been ill some time and died of heart trouble caused by overwork.

☛ FREDERICK E. HAGGKVIST '16, on June 9, at the Naval Hospital in San Diego, Calif. He served in the Naval Reserve Flying Corps during the War and continued in the service until his death.

☛ GILBERT H. HATHAWAY '30, on July 10, 1929.

NEWS FROM THE CLASSES AND CLUBS

1877

The following members of the Class were present as guests of President Charles A. Clarke at a luncheon given at the Algonquin Club June 6: Charles A. Clarke, Francis H. Bacon, George Bartol, William H. Beeching, William B. Bradford, Henry H. Carter, Edward W. Davis, Joseph P. Gray, Henry D. Hibbard, George W. Kittredge, Benjamin C. Mudge, Arthur L. Plimpton, Colonel George F. Quinby, Frank I. Sherman, and Belvin T. Williston. Arthur W. Dearden called to greet the President and classmates but did not stay to the lunch.

Letters were read from the following: George H. Freeman, Sarasota, Fla.; William H. Lawton, Newport, R. I.; Frederick W. Wood, Baltimore, Md.; George F. Swain, Brookline, Mass.; Frederic J. Brown, Woburn, Mass.; Thomas F. Stimpson, Providence, R. I.; Cecil H. Peabody, Washington, D. C.; Frank C. Skinner, Washington, D. C.; Harry C. Southworth, West Stoughton, Mass.; Edward G. Tabor, Spokane, Wash.; William L. Hallett, Denver, Colo.; Wallace Hackett, Annapolis, Md.; Wilfred Barnes, Melrose, Mass.; Edward G. Cowdery, Chicago, Ill.; Harry A. Brown, Lowell, Mass.; and Martin Gay, New York City. Of the 46 living members of the Class, 32 were either present or sent regrets.

Previous to this meeting the writer called on George F. Swain, who has been confined to his bed a long time. I found him cheerful, free from pain, and thankful there were so many things he could enjoy. Many of those who sent regrets were unable to be at the lunch on account of poor health. As I had requested a message from Swain to his classmates, and the many students who have been under his tuition, I add the reply letter from him: "I am sending you, as requested by the Secretary, this short message. It is now three years that I have been unable to attend the Annual Reunion. I am still confined to my bed, but as I am still able to get a good deal of enjoyment out of life, I try to keep cheerful. I send hearty greetings to you all."

President Clarke read a letter addressed to Mrs. Richard A. Hale notifying her of his sending twelve autographed Wedgwood plates showing different views of Technology. The members present were pleased at his thoughtfulness and requested the privilege of contributing. This he allowed; his only objection was that they gave too much. The members present voted to elect Charles A. Clarke President, and Belvin T. Williston Treasurer and Secretary for the coming year. Williston was elected to represent

the Class of '77 at the Alumni Council Meetings. Motor transportation was furnished by the President for the use of his guests after the meeting.

Information has just been received of the death of Walter H. Plimpton. He was born December 10, 1855, and died at his home in San Diego on January 19, 1930, after an illness of two years. It is with sorrow we record his passing. — BELVIN T. WILLISTON, *Secretary*, Monmouth Street, Somerville, Mass.

1882

At the All-Technology Reunion, June 6 and 7, the Class of '82 was represented by eight of its members; who, notwithstanding the extreme heat and humidity of those two days, had enough pep — regular Technology pep — to attend one or more of the very interesting functions. Following the Inauguration of Dr. Compton as President of the Institute and the tea at the President's house on the afternoon of the sixth, the classes of '82, '83, and '84 met for a joint reunion and dinner at the University Club. The occasion was much enjoyed. Besides the satisfaction of meeting classmates it was a pleasure to shake hands again with members of these other two classes as we had not seen some of them for many years.

Those who attended the dinner from '82 were: John and Henry Ross, French, Walker, Warren, Gooding, and Darrow. Jenkins, Wardwell and Keyes were expected but were unable to be present. By an unkind fate, that is not in accord with the Nineteenth Amendment to the Constitution of the United States, the ladies seemed to be barred, as it were, from attendance at Class dinners on June 6. So it was that our valued classmate, Miss Ames, on that evening found a refuge at the dinner of the M.I.T. Women's Association at the Hotel Statler, where many Alumnae and guests enjoyed a pleasant reunion.

We record with sorrow the death of Franklin Varney Strickland, a member of the Class for two years in the course in Mechanical Engineering. After finishing his studies at Technology he was for many years connected with The Union Iron Works, Inc., of Bangor, Me. Here he held the position of general superintendent and later was made Secretary of the corporation. About four years ago he resigned this office and retired from business. All who knew Frank Strickland loved and respected him for his many fine traits of character. His classmates remember his pleasant ways and a certain quiet humor that was delightful. He died at his home in Bangor on April 13 last. His wife and daughter survive him. — ALFRED L. DARROW, *Secretary*, 8 Beacon Street, Boston, Mass.

1883

At the All-Technology Reunion in June, '83 entered into a merger with '82 and '84 for a Class Dinner. The merger, which was engineered by Augustus H. Gill, Secretary of '84, was a great success. The dinner was held at the University Club in Boston. 24 men were present. '83 was represented by Bryant, Capen, Gale, Richards, Stevens, Underwood, Smith, and Wesson — the last named officiating as toastmaster. The postprandial exercises were very simple and informal and consisted mostly in springing yarns and interchange of information regarding absent classmates.

Harvey Chase was reported as recuperating from the severe illness of a year ago. — Harvey Mansfield is still living in Tampa, Fla., hunting purchasers of phosphate properties. — Eppendorf has written in that he is well but too busy to come to Boston. — Outside of the members present, and those mentioned above, the rest of the Class was unaccounted for. An informal census was taken of those present for the purpose of finding out how many had followed the professions which they had acquired at Technology. It appeared that just about 50% of those present were still employed in or practicing their professions, others having branched out into other lines of endeavor, or else had retired. — DAVID WESSON, *Secretary*, 111 South Mountain Avenue, Montclair, N. J.

1884

Fitch is in receipt of an interesting letter from Gardner W. Carr, the son of Frank Carr. He states that all three of the boys participated in the great War, he being mustered out as a captain of heavy artillery. The second son, Allen, went into the medical corps, was injured while on duty and was discharged from service on disability. He subsequently went back into the military service in the intelligence department and was in Mexico and Central America. Burton, the youngest, trained in a machine gun battalion and the armistice was signed before he went overseas. He is at present in the automobile business. Allen is factory representative for the Ritter Dental Supply Company on the west coast, Western Canada, and Alaska. Gardner himself was with the Nurdyke and Marmion Company and was with the engineering division of the Army Air Service at Dayton, and is now with the Boeing Airplane Company of Seattle, in charge of manufacturing.

On March 1, Pratt resigned as Vice-President of the operating division of the Stone and Webster organization, to attend to private business. He may be found at 89 Broad Street, Room 1130,

1884 Continued

Boston. Five years before, on the occasion of his promotion to Vice-President, he received an illuminated parchment as a mark of the appreciation and regard in which he was held by the managers of the companies with which he was associated. — AUGUSTUS G. GILL, *Secretary*, Room 4-047, M. I. T., Cambridge, Mass.

1888

The passing of Will Snow, our Class Secretary and Treasurer for the last 17 years, left a vacancy which cannot be filled. Beloved by all his classmates for his untiring efforts to maintain interest in class affairs, he made a record that will be hard, if not impossible, to continue.

Ned Webster entertained 26 members of the Class at dinner on June 5 at his Chestnut Hill home. The long distance members present were: Charles G. Merrell, from Cincinnati, who wired his acceptance at the last moment, after breaking away from business entanglements; Moore of Cleveland, our freshman baseball player, who has not met his classmates for nearly forty-five years; Alexander Jarecki of Erie, Penna., head of one of the largest valve and fittings manufacturing companies in the country; Charles A. Stone, Allen Hazen, and Bertram P. Flint of New York, and Edward M. Smith of North Hampton, N. H., who has been connected with the Boston and Maine Railroad for more than forty-two years. Others present were President Alfred H. Sawyer, Edwin S. Webster, John C. Runkle, Henry J. Horn, James E. Fuller, Benjamin G. Buttolph, Arthur J. Conner, James C. T. Baldwin, William T. Keough, Sanford E. Thompson, Ralph W. Reynolds, George W. Hamblett, Frank O. Stetson, Fred B. Cole, Ivar L. Sjöström, Frederic J. Wood, Charles L. Faunce, Luther W. Bridges, and your Secretary.

At the business meeting following the dinner, Alfred H. Sawyer was re-elected President and Bertram R. T. Collins Secretary and Treasurer. The dinner fully maintained Mrs. Webster's reputation as the Princess of Entertainers.

Nearly all the above with Herbert S. Bird and daughter of Brooklyn attended the All Technology Reunion at Swampscott on June 7. Thompson and Collins, with Harry Cutler '81, enjoyed the fairways, greens and traps (?) of Tedesco for 18 holes of exciting golf.

Johnnie Runkle with Mrs. Runkle and their four daughters are enjoying a three months' sojourn in England, arriving at Cambridge by way of France, Belgium, Denmark, Sweden, and Norway. One of Johnnie's daughters is taking a course at the University and Johnnie himself is renewing his studies so that when Technology's next President is inaugurated he will be entitled to wear a cap and gown with multi-hued hood.

It is with the deepest sorrow that we record the death of one of our most distinguished classmates, Allen Hazen, who died on July 26 at Miles City, Mont., of a heart attack while on a vacation trip

with his daughter. Hazen was an outstanding authority on hydraulics, water supply and sewage disposal. He was born in Vermont in 1869. Through his basic studies in water supply and filtration he became a leader of thought in hydraulic and sanitary engineering. He constructed the first slow sand filter plant with continuous filtration in the United States. He was the author of numerous books on subjects relating to his chosen profession and took an active part in the affairs of the American Society of Civil Engineers.

Stone and Webster, Inc., are about to build a fifty-story office structure on Broad Street, New York, to be occupied by them and their affiliated organizations.

Walter K. Shaw's sloop *Andiamo* won the famous Puritan Cup in the annual regatta of the Eastern Yacht Club off Marblehead, July 4. — President William G. Besler, of the Central Railroad Company of N. J., was prevented from attending the Class Dinner, due to the fact that he had previously accepted Mr. E. T. Stotesbury's invitation to his annual "Farmer's Dinner" at White Marsh, N. Y., which he has attended for twenty-five years.

Stetson of Lynn, although twenty-four hours late for the Class Dinner in 1929, was on hand promptly this year. He couldn't afford to miss two of Webster's regal banquets. Frank A. Moore, architect, and also present golf champion of the Class, was unable to attend the dinner this year, but sent regrets with fond memories of Billy Snow and the Fortieth Reunion at Chebeague Island.

Our classmate, Guy W. Currier, one of the most noted lawyers of the Massachusetts Bar, died at his summer home in Peterboro, N. H., on June 21. He was a member of the board of trustees of the Boston Public Library since 1922, and chairman of the Boston Port Authority. He was born at Lawrence, Mass., December 22, 1867. His death was attributed to a heart attack which came on him in his office in Boston, two weeks before he died. He served in the Massachusetts House of Representatives and Senate in 1899 to 1902. He was a member of the Algonquin, Eastern Yacht, Engineers, and University Clubs of Boston, Country Club of Brookline, and The Technology Club of New York. Currier was extremely well informed in all matters of public administration, of sound judgment, and possessed a rare understanding of human life. His death came as a profound shock to all his friends and associates. — BERTRAND R. T. COLLINS, *Secretary*, 18 Athelstane Road, Newton Centre, Mass.

1890

Miss Marie Ada Molineaux is Corresponding Secretary of the Boston Browning Society. — In the April issue of *Mechanical Engineering*, Calvin W. Rice has a very interesting article on "Fifty Years of the A.S.M.E." — The Chemical Bank and Trust Company have announced the election of John H. Towne, Secretary and director of the Yale & Towne Manufacturing Company, as a

member of the advisory board for the Forty-sixth Street and Madison Avenue branch of the bank. — Pierre S. duPont, who has already given \$12,000,000 for the erection of public buildings and the construction of public highways in Delaware, now proposes to donate half the cost of a \$1,000,000 modern school house, to be erected on a site adjacent to the home of Bayard Taylor, who had so little money that when he wanted to tour Europe he had to go on foot. — The annual dinner of Hayden, Stone Company was held in New York on May 3 and our Charlie presided. — Francis H. Kendall is a member of the Tercentenary Committee for the town of Belmont, Mass., where they held a three-day celebration beginning July 4. — We regret to announce the death of Mrs. Charles W. Sherman. Mrs. Sherman had not been well for the past two or three years, and they had been visiting Charlie's brother in Washington. Charlie has the sympathy of the members of the Class. — Ernest A. LeSueur is located at 71 Sparks Street, Ottawa, Ontario, Canada. — Eugene Holmes is in the law business in Los Angeles, and has his office at 1151 South Broadway. — We regret to announce that we have just received word of the death of Professor Sarah Effie Smith of Mount Holyoke College. Miss Smith passed away November 18 of last year. — All correspondence sent to Harold B. Roberts the past year has been returned, but we finally located his address at 190 Hillside Avenue, Mt. Vernon, N. Y. We trust after this we shall be able to get in touch with him. — In the *Engineering and Mining Journal* for April it states that "The Sonneman adit has been driven 500 ft. toward the Golconda." This refers to our classmate, George A. Sonneman of Spokane, Wash.

The Class of '90 did hold a Reunion dinner in spite of the fact that the official program of the 1930 All-Technology Reunion in the list of Class dinners read "'90 No dinner." A slight error. The plans for the '90 dinner, the Fortieth Anniversary, were made six months ago and it was probably the first class to so notify the Class Dinner Committee. That is probably why they were overlooked as being too previous. However, no hard feelings. The Class, as per notices sent in January and again in May, spent Thursday, June 5, at the Belmont Spring Country Club with dinner served at half past one. The members of the Class met that morning at the Walker Memorial, where plenty of cars were supplied by members of the Class and an hour later all were at the Club to enjoy the day. The so-called golfers started their troubles at once. Billy Ripley and Harry Noyes led off and were followed by Len Wason, Gardner Voorhees, and Dougy Flood. Reports of the scores or how many balls lost were not disclosed. The rest of the Class with their wives spent the time renewing old acquaintances and wandering around the grounds and piazzas.

The luncheon was served in the ball room, with the tables arranged in a hollow square. Our Class President, Charles

1890 Continued

Hayden, presided and the Secretary gave various reports and read letters from absent members. After dinner the party took a ten-minute motor ride to Lexington to the home of their Secretary where a suitable aftermath in the line of liquid refreshment was supplied. The day was perfect and all are sure looking forward to our Forty-fifth Reunion in 1935. Of the Class members, 32 were present and 14 brought their wives to show how '90 conducts itself, and results were satisfactory. Those present were: Miss E. E. Bickford, Miss C. A. Bragg, Batchelder, Brownell, Clark, Crane, de Lancey, Flood, Hayden, Loring, Noyes, Packard, Ripley, Roots, Royce, Sherman, Wason, Whitney, and the following with their ladies: Burley, DeWolf, Dwelley, Emerson, Fuller, Gilmore, Goodwin, Johnson, Kendall, Nims, Rogers, Spaulding, Voorhees, Walker. Most of them attended the Reunion exercises Friday and Saturday and duPont, Fenn, and Mann appeared then.

Gardner T. Voorhees has recently published an important book on refrigeration. This is not the first attempt in Gardner's line. Gardner, with Mrs. Voorhees, is spending the summer in the State of Maine. — Cyrus C. Babb is with the U. S. Corps of Engineers, his address being P. O. Box 905, Charleston, S. C. — John L. Batchelder's business address is now 10 High Street, Boston. With Mrs. Batchelder and son they are living at the Ritz-Carlton Hotel in Boston. Batchelder was chairman of the successful Tercentenary Regatta held in front of Technology on the Charles River early in August. — More honors to Billy Ripley! At the 77th Commencement of the University of Wisconsin, the Honorary Degree of LL.D. was conferred on him. — Miss Lois Lilley Howe was unable to be with us at our Reunion, as she sailed for England for the summer, on May 28. — Mr. and Mrs. Harry Goodwin and son sailed for the other side on June 18, and plan to return early in September. — John Dearborn, who was with us our freshman year, died on June 6, 1930. — We note that Edwin F. Dwelley is one of three minority stock holders who have filed an attachment of ten million dollars against the Miners Land Corporation or the Premier Paymaster Miner Company. If Dwelley should get one third of this, we feel very sure he will not forget Technology. — Mr. and Mrs. Darragh de Lancey are spending the summer at Wood's Lane Cottage, Blue Hill, Maine. — GEORGE L. GILMORE, *Secretary*, 57 Hancock Street, Lexington, Mass.

1892

Here is another instalment of news from Kales which has been held over since June. "There is no water front in Damascus, though they make the most of every drop of water that flows down to them from the Anti Lebanon Mountains in the Abana River to lose itself afterwards in the salt lakes on the edge of the desert to the east. These lakes have no outlets. Damascus and the country around it is really a great oasis. We arrived there

cold and tired after an all day drive from Tiberias on the Sea of Galilee, with breaks on the journey to row over to Capernaum and to eat a picnic lunch on the banks of the Jordan River, just before we crossed the frontier into Syria. When we were taken into our uninviting, cold room in Damascus, and were told that it was the most comfortable hotel accommodation in the town, Mrs. Kales looked around and murmured, 'Why in the world are we here, when we have a good home to live in on Burns Avenue?' We soon had a little olive wood fire going in the stove and that cheered her up so much that the next morning she started out to do battle with the merchants in the bazaars, returning with spoils of war in the form of rugs and brass work.

"The drive over the mountains to Beyrout is something to remember with the stop of a couple of hours in Baalbek to see the magnificent ruins. It was good to see the blue Mediterranean again. In Beyrout they are not neglecting their water front. A beautiful drive runs along the water in the newer part of the city where our hotel was located. We could see the ships in the harbor from our windows with the high mountains back of them. The drive runs on along the water to the west and south on the edge of the rocky shore with the waves breaking at the base of the precipitous cliffs. Much work is now being done on this beautiful drive. The town realizes its natural advantages, and is not neglecting them. Is there more public spirit and appreciation of beauty in little old Beyrout than there is in Detroit?"

"After a wonderful drive down the coast with a picnic lunch in an orange grove, we got back into Palestine, and reached Acre a little before sunset. It was really thrilling to ramble about this place where the crusaders under Richard Cœur de Lion fought their battles; and where the incidents in Scott's novel, 'The Talisman' took place. Also it was there that Napoleon suffered his defeat, and was obliged to return to Egypt, a beaten man. From Acre to Haifa there is no paved road. The autos whiz along the level beach between the sand dunes and the water, and the sand is so hard and smooth that tires leave hardly any tracks. I can tell you very little about Haifa, because we arrived after dark, and could only see the lights of the town twinkling on the slopes of Mount Carmel as we approached them. Our hotel had been once a very imposing old dwelling house. In the morning from the balcony outside our room we got a glimpse of the snowy head of Mount Herman above the coast range. Mount Herman is one of the dominant features of the landscape in northern Palestine and southern Syria. You can almost always find it somewhere in the distance. The Sea of Galilee, the Jordan River, and the Dead Sea owe their existence to its melting snows.

"From Haifa we took the morning train to Cairo arriving about half past ten in the evening. In Cairo I fear I neglected my duty; for I did not make a study of the water front as a whole. A most beautiful portion of it lay just in

front of our hotel, with the graceful Nile sailing craft skimming over it, and the Pyramids off in the distance."

At the All-Technology Reunion this June the following men were at the '92 dinner: Braman, Carlson, Church, Dean, Fairfield, Fuller, E. C. Hall, J. W. Hall, Heywood, Hutchinson, Johnston, Kales, Mathews, Maynard, Norcross, Nutter, Park, Pettee, Sargent, Shepherd, Slade, Tidd, Tucker, Wells, and Worthington. There were no formal speeches, but Kales told us a little more about his late trip around the world, and Carlson and our faculty members gave us some idea of what is going on at the Institute. Mathews, Norcross, and Wells contributed to the discussion as to placing graduates. As is usual at our dinners, the talk was rather on the serious side of life than of reminiscences.

During the dinner a telegram of greetings to the Class was received from A. G. Pierce and the Secretary read messages from Burrage who "hopes that their hairs are no grayer than mine." — Dennett would like to see what life had done to us. Hilliard says that he is unable to walk. — Ingraham sends his regards to all the boys. — Koch says "it is impossible for me to be present on account of ill health." — Locke, who almost never misses our Reunions was not able to be present this time but says he is still the youngest oldest member of '92, full of pep and hustling at present on the Sanitary Census of the metropolitan watershed. — Manley sent his greetings to all and sundry as did Muller and Wooffindale. — W. P. Gray sends best wishes and says, "I always remember the Class of '92 with affectionate regard." — Mrs. Mary Lovering Holman says, "I should really like to come to the Class Dinner and see just what the last 38 years have done to us all. Probably we are a few pounds heavier but not only does my sex forbid, but I expect to be in New York on June 6. I hope you will all have a thoroughly enjoyable time. In your next Class report you might note that I published a book last year in collaboration with my daughter."

The Class of '92 was represented at the Alumni Dinner by Mr. and Mrs. Kales, Mr. and Mrs. Wells, Professor and Mrs. Hutchinson, Professor and Mrs. Johnston, Carlson, Church, Harwood, Heywood, Professor Fuller, and J. W. Hall.

Coming just too late to be carried in the last number of *The Review*, the following letter from Newkirk is inserted now for I am sure it must not be lost in the oblivion of my files: "Last October I yielded to the temptation to take a trip around the world, the immediate excuse being the World Engineering Congress held in Tokio the last few days of October and the first week in November 1929. Many others made use of the same good excuse, among them being Kales. He and Mrs. Kales were on the same ship with us to Japan. We met them again in China and at Singapore, and once more at Alexandria sailing from there to Naples together. After the World Engineering Congress ended the group split up. Mrs. Newkirk

1892 Continued

and I went to Peking, going by boat instead of by rail through Korea and Manchuria. We tried to go by rail but passed it up when we learned of the impossibility of securing accommodations en route.

"In Peking nearly everybody I knew got sick. The Peking dust seems particularly rich and I guess that and the cold weather and perhaps the too strenuous sight-seeing all had something to do with it. Some were content with mere colds, but I managed to come down with the flu and had to go to a hospital for the balance of my Peking visit. Incidentally being sick was indirectly nearly my finish. The delay it caused was just enough so that the steamer on which we went to Shanghai (trains had all been cancelled because of a meeting of supposedly friendly soldiers) was caught in a terrific gale and snow storm. This was so severe that our little steamer had a serious time of it, the climax being a broken propeller shaft coupling. As luck would have it, we had been blown so far off our course (nearly over to Manchuria) the water proved to be not too deep to anchor. So we lay at anchor for two days while the shaft was repaired. Meanwhile we were in the trough of the sea most of the time, helpless, and rolled so badly that it seemed incredible each time that we did not go over. But here we are at Rome, still alive. Must be there is another '92 Reunion that I am being saved up for.

"Since that China sea experience things have been normal. We spent several days in Shanghai; one in Hong Kong. Then into the tropics at Manila, Singapore, and Penang, up into Siam and over into Indo-China to see the ruins at Angkor (one of the important must do's for tourists). Here it was that we ran into King C. Gillette of safety razor fame, who pathetically called his wife's attention to a photo of their handsome home as contrasted with what she had dragged him to see. He had my sympathy. We spent about a month in India visiting most of the important centers. In many ways, in spite of India's age, it is very primitive. And with all its numerous religions and different races of people, its ridiculous and awful caste system, it is marvelous that England keeps it in order as well as she does. And I feel sorry for the country if Gandhi or anybody else ever secures its independence. I believe it would be torn to pieces by the natives fighting among themselves. They should be thankful to have England for their boss. Leaving India via Ceylon (where Lipton raises much of the tea from which to secure the price of his *Shamrock* yachts), we had a very pleasant trip across the Indian Ocean through the Red Sea and the Suez Canal to Alexandria.

"Egypt is mostly sand and monuments (polite for ruins) and beggars and I was so fed up with that sort of thing, that I persuaded Mrs. Newkirk to pass it up. So we made only a hurried trip to the pyramids and the sphinx, returning to Alexandria in time to continue on the same ship. Now we are in Italy and have visited Naples and vicinity about three weeks, on the island of Sicily mostly at

Taormina and here in Rome. A few days ago I was surprised to hear somebody calling my name and turned around to find Moody beside me. Moody was with him. Unfortunately they were just leaving, so our chat was mostly hello and good-by.

"One very enjoyable feature of the trip from San Francisco to Japan was the presence of our old friend Professor Richards. He was the life of the party on board ship and at a number of dinners in Japan. He led such a strenuous life that I have often wondered how he stood it. I forgot to say that among the crowd of people who saw us off at San Francisco was Fred Harvey. I had not seen him since I left Technology. There were many other Technology men on the ship to Japan, and we met a large number in Honolulu, others in Japan, China, and in Manila, all of whom did all they could to show us a good time. Remember me to any of the boys you happen to see." — JOHN W. HALL, *Secretary*, 8 Hillside Street, Roxbury, Mass.

1895

The Thirty-Fifth Reunion of the Class has passed into history with the sweetest recollections of old friendships renewed. It was a delightful Reunion.

The first gathering of the clan occurred at the Class dinner at the Hotel Kenmore on Friday evening, June 6, when 36 of the old guard responded to roll call. It was a most informal affair, just the kind that '95 enjoys, where everyone could chat together and feel entirely free from a scheduled program. No set speeches were permitted, so that everyone had an opportunity to look into the other fellow's past, and learn of the successes or disappointments as best he could. A progressive stunt was instituted by the Secretary which required groups of three to progress from one table to another, thereby insuring contact of every member with every other. It worked wonders and everyone had a great time.

Some of the boys who attended the dinner were unable to be at the All-Technology Reunion at Swampscott or our Thirty-Fifth Reunion at Plymouth, and this contact alone repaid their attending. The following attended the Class Dinner: C. M. Adams, Alden, Ballou, Barrows, Bixby, Booth, Bourne, Canfield, E. H. Clapp, Gus Clapp, Chase, J. Williamson Cooke, Conant, Cutter, Defren, Geiger, Gregory, Hurd, Humphreys, Jackson, Miller, Park and Franklin, Jr., W. D. Parker, Richards, Sheridan, Sherman, Swope, Tillinghast, Walworth, Watkins, Whorf, W. S. Williams, Wolfe, Wray, and Yoder.

Al Geiger who has been missed these many years was on hand and enjoyed his first really great Reunion. Jerry Swope, who had an important previous dinner engagement, found time, nevertheless, to be with us for the first few courses.

Following the Class dinner, several of the men went to the Hotel Statler to join their wives who were being entertained by the M. I. T. Women's Association at a dinner and dance.

THE TECHNOLOGY REVIEW

Our next event included the festivities at Swampscott. Here again '95 shone as effectively as ever, clad in their smocks of blue with trim and pleasing orange tam-o'-shanters. Frank Bourne is due thanks for the color scheme. Nothing like it! We received a great ovation from the assembled crowd. Headquarters were established at the New Ocean House where every man was registered and fitted with his regalia. Sizes varied from a 36 to a 44 to fit the slender as well as the portly fellow.

After a most excellent lunch '95 held a rendezvous, giving an open air concert with Dennie at the piano, Clapp at the saxophone, Park at the snare drum and cymbals, and Swope at the bass drum. In the group there were Doctor Stratton and Prexy Compton, who were more than successful as singers. The concert was directed by your humble Secretary. This all happened while we were being filmed by the Institute photographer. What a wonderful time we all had! You will see us in the movies.

Those attending the outing at Swampscott were: Mr. and Mrs. Alden; Mr. and Mrs. Booth; Frank Bourne; Mr. and Mrs. Canfield; E. H. Clapp; Gus Clapp; Mr. and Mrs. J. W. Cooke; George Bixby and son Albert; George Cutter; Mr. and Mrs. Gregory; Mr. and Mrs. Hurd; Mr. and Mrs. Humphreys; Jackson; F. A. Park and Franklin, Junior; W. D. Parker; Dick Sheridan; Swope; Mr. and Mrs. Watkins; Whorf; Mr. and Mrs. Wolfe; Mr. and Mrs. Wray; Walter Williams; and Mr. and Mrs. Yoder and son Morton. Mrs. David B. Weston and children were also guests at this great event. — The great banquet at the Hotel Statler was attended by thirty odd men with their wives, and here again we refreshed and rejoiced. This was the only "boiled shirt" gathering; believe your Secretary.

Now the greatest and best of all events was our Thirty-Fifth Reunion of the Class at Plymouth, Massachusetts, on June 8 and 9. Leaving the Hotel Statler Sunday morning at nine o'clock, dispatched most cleverly by starter Jackson, the cavalcade journeyed in automobiles to the Hotel Mayflower at Plymouth, where they arrived about eleven, and were met by the reception committee headed by Ned Huxley who motored direct from New York with Mrs. Huxley, arriving Saturday evening in advance of the cavalcade. John Jacob Moore and Mrs. Moore were also assisting. Great was the rejoicing and greater the embracing, for many of us had not seen one another for many a year.

After bags and baggage were duly landed at the hotel, and the cares of the past laid aside, everyone immediately entered into the interesting program prepared by the committee. Sunday dinner was the beginning of our frolic. We all ordered freshly broiled lobsters and the demand was so great that the hotel management were forced to issue an S.O.S. call for an additional supply of '95 Lobsters! The lobsters were finally served progressive style. In order to make it more attractive to our ladies, it was ruled that

1895 Continued

two persons of the same name were not permitted to sit at the same table. The rule worked wonders throughout the entire Reunion. Souvenir chocolates were presented to all the ladies during the desert course.

Arthur Canfield and Ned Huxley officiated as chief stewards and their table seatings were most satisfactory. Dick Brown had his celebrated orchestra on hand, and music of the highest order was the result. The Class meeting was held following Sunday dinner in order to accommodate those who could remain only for the day. Bourne, Park, and Swope were forced to leave early so this change of program gave them a chance to attend this important meeting, which was handled by Tom Booth — our able President. The Secretary reported as to the success of the plan for financing these five-year reunions. Letters of regret were read from a number of the men not present. A complete round-up of names was taken to learn who of the '95 men were slipping.

The Secretary then read the list of those who had passed away during the past five years. There was a total of twenty-seven: In 1925 — C. H. Parker; F. C. Hatch; Guy Carleton; E. J. Loring; J. H. G. Wolf. In 1926 — W. P. Robins; J. W. Thomas; H. E. Smith. In 1927 — C. L. Parmelee; W. N. Crafts; S. S. Clark; P. H. Withington. In 1928 — J. F. Emery; H. M. Haven; H. W. Cotton; F. A. Davenport. In 1929 — F. B. Sherman; Kate A. Bowen; John Dove; W. C. Brackett; W. J. Rice; J. A. J. Fitzgerald; D. E. Aultman. In 1930 — to date, G. M. Holman; Mrs. F. W. Taussig (Laura Fisher); J. H. Parker and B. J. Clergue. A rising silence was observed in their memory.

Your Secretary having served during the past five years (as best he could), it was voted to elect him as permanent Secretary. In order to have someone to lean on beside our able President Booth your Secretary suggested an assistant to care for and help to handle the ever-growing New York contingent. John H. Gardiner was voted Assistant Secretary as he is located in New York City. If at any time you find your Secretary too hard on you, just write John Gardiner at the Graybar Electric Company, Inc., Graybar Building, N. Y. C., whom you will find most kindly and sympathetic toward your appeals. This arrangement will meet with general approval as Fred Cutter of 50 Church Street, who has most ably fathered the New York men, will be glad of his help and cooperation.

Following the class meeting we all posed for the Class picture, assembling on the front steps with "hair combed, wearing a smile," as requested on our programs. Al Sloan, Jr., had a previous engagement at sea, could not be with us at dinner, but influenced his skipper to steer his yacht toward Plymouth and appeared just as we were taking the photograph of the class. In the hurry Al was furnished a smock by one of our gracious ladies, and would you believe it — Al departed after the event with the smock and the lady's hotel key! You know us,

Al, we were mighty glad to have you with us even for just a short stay. Sunday afternoon was scheduled on the program "as you please" and the majority were found chatting together while the golf friends took to the links.

Sunday supper over, we had a most delightful treat in the presentation of an original illustrated lecture entitled "The Romance and Reality of Boston Harbour," prepared especially for Tercenary Observance by Sarah Lee Whorf, photography and coloring by H. C. Whorf. Monday's dinner proved another huge success. Ned and Mrs. Huxley represented Mr. and Mrs. Generalissimo and, properly garbed, distributed favors of all kinds to everyone. The atmosphere was heavy with good fun and repartee long to be remembered by all. The Famous '95 Travelogue was presented after dinner, a unique entertainment inasmuch as none of the three speakers knew what their subject was until the slides appeared on the screen. Arthur Canfield roamed about in Bermuda, Ned Huxley in China and Sweden, while Johnny Moore had some difficulty in Africa, but was on the job immediately when he discovered Ireland. Henry Jackson next entertained us with a four-reel motion picture of his trip to the British Isles. At this juncture your Secretary was embarrassed, but delightfully surprised, when Arthur Canfield, as one of a committee of the Class, presented him with a beautiful jeweled watch in appreciation for service rendered. Your Secretary would be remiss if he did not accept this opportunity to most heartily thank those interested in the gift for this expression of deep and sincere friendship. Well boys, this watch is a wonderful asset, as I now regulate the time in the town of Ayer, Mass. Beside those attending the class dinner and the Swampscott outing there were present at the Reunion: Mr. and Mrs. A. W. Drake, F. E. Faxon, and J. H. Gardiner. It is a noteworthy fact that the congenial spirit among the wives contributed greatly to the social success of the Reunion.

The Reunion Committee begs to thank all who have so generously contributed to make this memorable occasion a financial success. The Secretary also thanks those who have remitted for the five years' class dues.

Judson Dickerman writes from San Francisco that he has been in the West for the past three months making an extensive visit and survey of the Electric Power and Gas Public Utilities, as part of the Federal Trade Commission's investigation. "This has involved several thousand miles of auto riding in company with the active field men of the operating companies, visiting power plants on the rivers and back in the mountains and canyons, seeing the types of communities and industries served, the character and occupation of the country traversed with transmission lines, and in general a personal observation of the facilities for service, the conditions of development, the personnel, the geographic and economic influences affecting operations

and growth. In addition to the properties of the company operating in Cleveland and St. Louis, the trip has or will cover most of the important properties in Utah, Idaho, Washington, Oregon, and California, including four of the large publicly owned systems. Desert and forest, irrigated and naturally watered lands, mountains, and river valleys, sea shore and lakes, big cities and isolated farming area, all sorts of hydro plants and some fine steam plants — all have been experienced and observed in connection with utility service available. Reports based on these inspections will probably become a part of the formal record before the Federal Trade Commission during the coming winter's hearings."

From a recent issue of the *Engineering and Mining Journal* we note: "F. W. Draper of Mount Isa Mines, Ltd., Queensland, Australia, delivered an address on March 18 before the Mining and Metallurgy Association of the Missouri School of Mines. Mr. Draper was formerly professor of Metallurgy at this school."

We have learned through the *Chicago Tribune* of July 1, 1930 of the death on Friday, June 27, of Mrs. Olivia LeBosquet Rice of Haiku, Maui, Hawaii. Mrs. Rice is the oldest daughter of Maurice LeBosquet. We also learned from correspondence that Edward Schoentgen of Council Bluffs, Iowa, has been interested in educational developments. He has served on the Iowa State Board of Education for the past thirty years, having been reappointed by three different governors. This State Board has charge of all the schools and colleges in Iowa above the grade of high school which are supported by taxes.

We regret deeply to announce the sudden death of Bertrand Clergue in Montreal during the first week of May last, while en route to France for a vacation period. Clergue had written that he was unable to attend the Reunion as he had planned a trip to France, to get rested from his strenuous management of the Waterbury Tool Company, Waterbury, Connecticut. He had always enjoyed the best of health, and was an indefatigable worker. He developed a weakness of the heart which finally provoked his early death. In his professional work the machinery designed for the air mast at St. Hubert, Montreal, and the cables on the Hudson River Bridge are outstanding monuments to his memory. He was always jovial and a good mixer, and had many friends both in the States and abroad where he was a frequent visitor. We reluctantly record his untimely passing beyond. — LUTHER K. YODER, Secretary, Ayer, Mass. JOHN H. GARDINER, Assistant Secretary, Graybar Bldg., New York City.

1896

True to the old saying that misfortunes never come singly the Secretary regrets to report the death of Ben Hurd which occurred on August 6. The report did come some months ago that Ben was not in the best of health, but Rockwell who saw

1896 Continued

him in the spring and at our Class Dinner during the Reunion said that although Ben had a bad heart, his condition was considerably improved and he would probably get along all right for a number of years. However, Ben undoubtedly realized his condition and put his affairs in shape against a sudden end. He had come on from New Jersey to spend the summer at Nonquit as usual and on the day of his death, he went to fill a dentist's appointment in New Bedford. After leaving the dentist's office, he fell on the sidewalk where an acquaintance recognized him and took him to the office of Dr. Phillips as requested by Ben after he recovered consciousness. The doctor examined Ben and assured him that his heart action was normal and then as he started to leave the doctor's office he said that he felt another faintness coming on. The doctor immediately laid him on his back and Ben breathed five or six times and expired. The funeral was held on Friday, August 8, at the Chapel of Oak Hill Cemetery in Newburyport, Mass. Rockwell and Joe Driscoll, together with representatives of Ben's fraternity, attended the services. Mrs. Hurd died a few years ago so that the three daughters are now left as orphans. A further more detailed account of Ben's career will appear in a later issue of *The Review*.

Joe Howe reports from Texas that he made a business trip north during July during which he included Cleveland in his itinerary and there learned of George Merryweather's death. — Henry Jackson never passes the Secretary's door at Technology without looking in. At the time of his last call he announced that he was about to start on a pleasure trip to Montreal and his face beamed as he made the announcement. — Mark Allen was in Boston on June 23 with his son and called on the Secretary at Technology. He was making a round of the eastern colleges with the boy in order that the latter might get a broad perspective of educational institutions and be better able to make a choice for himself. — M. S. Jameson likewise was at Technology on August 18 with his son who has definitely decided to come to Technology in the fall. Unfortunately the Secretary was away that day and failed to greet Minor in person. Jameson had been on a European trip and a note from him stated that he had had a wonderful time in southern England, Wales, and Ireland, although the weather had not been so good.

Karl Pauly who had not appeared at the Reunion because he had an alibi that he was going to the World Power Conference in Berlin during June, never left Schenectady at all. On account of unusual business conditions he finally decided that it was better for him to be on the job than attending a World Power Conference in Europe. This alibi of Karl's has been accepted with a definite understanding that in order to square himself, he will have to appear in person at our Thirty-fifth Anniversary next June. — Bert Thompson was married to Helen Burlingame at Lowell on June 30 and he

and his bride will be at home after November 1 at 205 Fairmount Street, Lowell, Mass.

It is a pleasure to report that a long missing classmate has been rediscovered in the person of Captain Harry G. Hamlet who turned up at the June Reunion. He is superintendent of the United States Coast Guard Academy at New London, Conn., and at last report was away on a cruise to Europe. — Another classmate whose whereabouts were uncertain has been definitely located right under our nose. He is Malcolm H. McGann of Buchanan, Va., and he is with the Emergency Fleet Corporation at 75 State Street, Boston, Mass.

Among the honors given by the University of Maine at graduation time was the degree of Doctor of Engineering to our classmate Nathan C. Grover. The fact that the President of the University of Maine at Orono is a '96 man may have been a factor in this matter, although Grover richly merited the honor. — Classmates did not see Gurney Callan at any of the Reunion events. Apparently the explanation was given in an announcement of the marriage of his daughter, Hildegard, to Donald T. Whittemore on June 19 at Appleton Chapel. The couple left immediately on a wedding trip of about a month before returning to their new home at 24 Quincy Street, Cambridge, Mass. Naturally Gurney was busy cooking up vittles and making other preparations for the wedding reception.

Gene Laws at last reports was temporarily employed in developing the Black Mule group of mines at Ely, Nevada, but he was itching to get back on a permanent metallurgical job. — Le Baron Russell is an important figure in State Street, Boston, as evidenced by his election as Secretary of the Bond Club of Boston last June.

A letter from Lloyd Wayne received shortly after the Reunion explained that he was unable to come to Boston at that time and also stated that Joe Stickney's plans to motor on and meet his daughter in New York and attend the Reunion at the same time were upset and he had to send his wife along instead. Joe was a busy man already, but he has taken on the chairmanship of the House Committee of the big Athletic Club in Indianapolis which is a job in itself. Wayne saw Guy Wall early in June at the University Club and the latter was all wrapped up in the 500 Mile Automobile Race of which he was an official. Wall is the same courteous, attractive, and interesting fellow as always and his services seem to be in great demand as a consultant in automobile matters.

A death which seems close to '96 men was that of the Rt. Rev. Sidney Catlin Partridge, D.D., Bishop of Western Missouri, which occurred on June 22. He was very prominent in the Episcopal church and the brother of our Welles Mortimer Partridge.

The death of George Merryweather was announced briefly in the last issue of *The Review*. Further details have been

received which indicate that for a couple of weeks prior to his death he was complaining slightly about his stomach but did not consider it serious and in spite of the fact that his doctor took a cardiograph of his heart, no heart trouble was shown. However, he had a serious attack on Sunday afternoon, June 8, and became very weak. This was followed by minor attacks in the afternoon and the final attack at nine o'clock that evening. The following account taken from a magazine summarizes his life and activities: "George Edmund Merryweather, President of the Motch and Merryweather Machinery Company, died Sunday evening, June 8, 1930, at his home in Gates Mills, Ohio.

"Mr. Merryweather was born at Cincinnati, Ohio, August 28, 1872. He was the son of George Neave and Ellen L. (Beaman) Merryweather. He was educated at the Massachusetts Institute of Technology, graduating in 1896 with the degree of B.S. in mechanical engineering. From 1896 to 1901 he was connected with the Brown and Sharpe Manufacturing Company of Providence, R. I., and he had charge of the exhibit of that company at the Paris Exposition in 1900. Mr. Merryweather was a pioneer in the automobile industry. He was Superintendent of the Overman Manufacturing Company at Chicopee Falls, Mass., builders of steam driven automobiles, from 1901 to 1903, and when that company was merged with the Locomobile Company of America, he became Superintendent of the latter company.

"In 1904, Mr. Merryweather, together with Mr. Edwin R. Motch and Mr. Stanley Motch, organized the Motch and Merryweather Machinery Company with its principal office in Cleveland, and branch offices in Cincinnati, Detroit, and Pittsburgh. During the World War, Mr. Merryweather was Chief of the Machine Tool Section of the War Industries Board. He was the holder of many patents pertaining to the machine tool industry and was one of the best known figures in that field.

"At the time of his death, Mr. Merryweather was a Director of the Central United National Bank; member of the American Society of Mechanical Engineers; Society of Automotive Engineers; Engineering Society of Cleveland; Cleveland Chamber of Commerce; Technology Club of Northern Ohio; University, Union, Mayfield, Philosophical, Chagrin Valley Hunt Clubs of Cleveland; the Detroit Athletic Club and the Cincinnati Club. He is survived by his widow, Laura (née Esselborn) and his children, Janet, George Esselborn, Constance, Hubert Orr, and Laura."

It is an outstanding tribute to George's memory that a number of classmates have spontaneously written notes expressing their high regards for him. He could always be counted on to do his bit and like Ben Hurd was one of the old guards whose face we always saw at reunions and who will be particularly missed. Perhaps Charlie Lawrence best expressed our feelings when he wrote

1896 Continued

that we should all be satisfied if we could so live like George that when we passed on our friends would say the same kind words of us that they have said of him.

Still another death is announced with regret. J. William Nagle died suddenly July 31 at Forest Hills, Mass. The funeral services were from his residence at 5 Hillside Avenue at 8:15 A.M. on August 4 and Requiem mass was held in St. Andrew's Church at 9 P.M. followed by interment at St. Patrick Cemetery in Natick, Mass. Billy Nagle did not complete his course with us at Technology and had not attended our class gatherings. The Secretary knew him intimately and maintained a contact with him. After leaving Technology he took up dentistry and became a prominent member of the profession in the Back Bay. He was born in Natick in 1875, the son of Mr. and Mrs. James Nagle. His father, who was a former postmaster at Concord, moved to that town from Natick while Dr. Nagle was still a young boy. Dr. Nagle was educated in the local schools, the Institute, and at Tufts Dental College, later taking up the profession which he followed for more than twenty-five years. Dr. Nagle was a past grand knight of the Boston Council, Knights of Columbus, and a charter member of the St. Appolonia Guild. He also was a member of the Massachusetts Dental Society. He is survived by his wife, five children, his parents, and a sister, Mrs. Willett P. Carleton of Winchester.

Perhaps it should be a warning to us that we surviving classmates have reached the age where we must look after our health and particularly our hearts. Like Hurd and Merryweather Nagle was stricken suddenly while making a call in Wellesley and passed away before he could be moved back to his home at Forest Hills. — CHARLES E. LOCKE, Secretary, Room 8-109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

1898

This was the year of the All-Technology Reunion, but an off year for '98. In consequence the only special feature for our Class last June was a dinner in the evening set apart for the Class Dinners. Ours was for men only, general provision having been made at the Statler for ladies, and we met in the Faculty Dining Room at Walker Memorial. '99 had the adjoining North Dining Hall and we visited back and forth, Lansingh leading the old '98 cheer.

We had a very fine dinner served by student waiters and after the tables were cleared and cigars going, we had an old-fashioned experience meeting. Starting with Charlie Winslow everyone gave an account of himself saying what was most on his mind to tell his classmates, and it was mighty interesting to note what they chose to say. Some talked of bringing up their families, some of their hobbies, some of their travels, some of conditions in general and some of special business enterprises or undertakings for public

good. The writer of these notes wishes that a stenographer might have taken all that was said to put on the Class records, but probably the presence of a stenographer would have marred the spirit of the occasion.

Winslow told of the dispute between Connecticut and Massachusetts on the matter of the use of water of Swift and Ware Rivers by Boston. He had the very bad taste to take the Connecticut side of the case as an expert. He told us the arguments, such as they were, why Boston did not need the water, although he did not believe that taking the water would hurt Connecticut. — George Anthony had been sick a good part of the previous winter which had kept him pretty quiet but he told of his sensations as a member of the faculty of Babson Institute. — Peavey told about the business and financial condition of the country. Babson was as interesting as he usually is, but we seem to remember that he was then very pessimistic about the immediate future of business. — George Treat was funny and pessimistic, too, but John T. Robinson gave the most optimistic view of the situation. He makes paper box machinery in Hyde Park, carrying on a business founded by his father. He also gave amusing anecdotes of his early relations with Henry Ford when he might have become Ford's partner by contributing \$10,000. — Ed Chapin is strenuously developing a new process in the cloth printing industry. — George Cottle has been traveling since he sold out his business interest. He told of conditions in China and of the recent anthropological discoveries there, some of which he actually witnessed. — Philbrick is again at Rye Beach developing his property there.

Porter told of his efforts to quit business. — Dawes is an electrical contractor at Hudson, Mass. — Goodrich teaches drawing at Technology. — Fiske is engineer in charge of the plant of the Christian Science Monitor. — Lansingh told us a fascinating story of molybdenum and tungsten and other rare metals with which he deals. He also has been involved in a big business combination and his concern as now organized dominates the situation in this line. — Joe Riley and Charlie Wing both gave their opinions in characteristic fashion — not to say that the views of these two are alike to the slightest degree — but both are characteristic. — Elliot Barker told of how his children have made good and how he cannot get out of active business. — Bill Brewster was back for the first time since graduation. He is Road Commissioner of West Virginia. — Arthur Blanchard told about Bill Brewster's roads, having been over them the previous summer. — Butterworth runs the Reversible Collar Company in Cambridge, he being another who maintains a successful institution founded by his family. — Lester Gardner is now in a measure footloose, having sold his interests in the *Journal Aviation*. — Ernest Russ was sick and not at the Class Dinner. The next day at the Swampscott outing and at the Alumni Banquet at the Statler he was on deck.

The replies to the notice sent out last spring give us an unusual number of notes of interest: Arthur S. Keene says: "Would like very much to be with you, but sickness in the family prevents. Am going strong, business has been good and is still going strong. Have attained a recognized standing in Kansas City and am at present a member of the City Plan Commission. Regards to all the fellows." — Franklin M. Kellogg says: "My son Franklin B. graduated from Princeton last June. He is married and comes home to see his folks just as often as you and I used to." — Capt. Paul Franklin Johnson, 3100 Maiden Lane, Altadena, Calif., writes: "With my 82-foot power cruiser, I won the 1930 ocean cruising race from Long Beach, Calif., to San Francisco. The race started from Long Beach, Thursday, April 24 at 9 A.M. The first leg was ninety sea miles to Santa Barbara, the boats arriving all the way from noon to midnight according to their rated speed and ability to buck the unusually heavy seas. There were nineteen starters, four withdrawing at Santa Barbara. One other was out forty miles west of Santa Barbara and had to be towed. The other fourteen finished at San Francisco, one on fire and in sinking condition — a wreck. The race was run on the past performance rule of the American Power Boat Association, each navigator stating the speed at which he would run his engines, which speed must not be exceeded. There were two classes: A, boats under 60 feet and over 32 feet; and Class B, boats over 60 feet and under 110 feet. *Sevelyn* was the largest and there were none under 45 feet. All boats were late at Santa Barbara due to heavy seas. *Sevelyn* was fourth on corrected time, but would have been second or first had penalties been applied at that time. *Sevelyn* was running on a rated speed of 10.38 knots, which is two knots less than the usual cruising speed. In such a race it is wise to run slow so as not to have to reduce speed too much in heavy seas. Most of the boats were slower than that. Two or three were faster. One, a 45-foot boat, was rated about 20 knots, and that is the one that ended a wreck, though a winner of Class A. No small boat can buck our Pacific seas at much more than 10 knots in safety.

"The second leg was from Santa Barbara to Monterey, 200 sea miles. Boats were starting all day Friday on their time allowances, scheduled to reach Monterey at 11 A.M. Saturday. *Sevelyn* left at 4:08 P.M., bucking very heavy seas for over forty miles, then had a comparatively smooth night run, reaching Monterey at 11:08 A.M. Saturday, being second on corrected time. Sunday the boats started again on their time allowances, scheduled to finish at 1 P.M. Some started long before daylight, *Sevelyn* started at 5:29 A.M. and finished the eighty-five mile run at 1:28 P.M. winner over all and Class B. The next boat not disqualified, was about fifteen minutes later, but the finish was exciting, nevertheless, because we did not know that the boat rapidly gaining on us and finishing fifty seconds later, was to be disqualified

for speeding and other violations of the rules. There was one boat finished ahead of us for the simple reason that knowing he was out of the race, he kept just ahead by exceeding his allowable speed in order to look like a winner to the crowd.

"Of the twenty-eight minutes we were behind schedule, all and more was lost the first day of rough going. Our consumption of gasoline and water reduced our weight by nearly four tons and thereby increased our speed over the schedule in the latter part of the race.

"The \$1,000 Lipton trophy was presented to me by Mayor Rolph on Monday evening at the boat show. My brother Carl F. Johnson '02 was my first mate and there were four other Corinthian yachtsmen in my crew. My wife and some of the family drove up and saw the finish. With them on board we spent the rest of the week cruising in the San Joaquin and Sacramento Rivers. We made the return voyage on Monday, Tuesday, and Wednesday in very heavy seas ending in a gale that did considerable damage along the coast but not any to *Sevelyn*. I had to leave almost immediately for Milwaukee and returned from there only a few days ago.

"I now plan to cruise to Santa Barbara June 9, watch the start of the sailing race to Tahiti on the 10th, follow them till dark and then head for San Francisco. I will then go on up the coast to Seattle for the summer, to cruise in Puget Sound and on up towards Alaska. Wish Seth Humphrey would come along to write up our adventures. I have read his 'Loafing Through the Pacific' which is very interesting and true about such places as I know about, except that he did not stay long enough nor at the right places in Southern California to judge it accurately. Frank and Mrs. Coombs came down to the yacht one Sunday while we were in San Francisco and we were very glad to see them."

Clarence Goldsmith says: "Sorry I shall not be able to attend the All-Technology Reunion during the first week in June, for I am on the program of the American Water Works Association which holds its Fiftieth Annual Convention in St. Louis, Mo., that week. If it were not a waterworks convention, it would probably be some other engagement which would preclude my coming, for during the past several years I have been devoting considerable time in endeavoring to establish short courses, or fire colleges, for firemen in each state in the Union. I am now Chairman of the Fire Service Extension Committee of the National Fire Waste Council, which is affiliated with the insurance department of the Chamber of Commerce of the United States. The schools have great possibilities, and just tell the fellows, if the matter is ever brought up for discussion, to give these schools their endorsement."—Horace Thayer writes: "I cannot come this year; all that I can rake and scrape together is to go into a trip abroad in the latter part of the summer. I guess I have never attended a Reunion since I graduated, but some sweet day I am coming."

R. S. Willis writes: "I exceedingly regret that I shall be obliged to be out of this part of the country at the time of the Reunion, so that it will be impossible to join you then. I am especially sorry for I had counted on being with you this year and had planned to that end. Will you please remember me with affection to all the good fellows whom I should so much like to greet by word of mouth? And will you not tell them that it will always be a happy occasion when any of them drop in on us? There is little of interest concerning my present life, of which to write you. I spent ten years in Mexico soon after leaving Technology. Thence to Spain for another exile of five years. Thereafter back to this country, where for some eight years I was one of the Second Vice-Presidents of the United States Rubber Company. In 1925 E. H. Huxley '95 and I set up this export business in which we have since been engaged. It has necessitated our traveling somewhat extensively in foreign parts. I have a married daughter who has a most promising candidate for Technology, and a rattling good son who graduated from Andover and from Princeton with high honors and who now is endeavoring to run down a Ph.D. at Princeton Graduate College. Thus, you see, my life is running along pleasant lines of no great excitement nor of much news interest."

Elwell F. Kimball is teaching in New York University. — Karl W. Waterson writes: "Having been connected with one company and one general line of work ever since graduation, I always find it difficult to write anything which would be a good news item. This does not imply lack of activity, for the telephone business is both large and active, but when one's work is concerned with various phases of general operations, it is difficult to cite particular items. I am with the department of operation and engineering of the American Tel. and Tel. Co. which is one of the general staff departments of the Bell System. My work these days is more concerned with operation than with engineering. For a good many years I was in charge of traffic staff work, the traffic departments of the operating companies doing the telephone operating work with its associated traffic engineering. For the last two or three years I have been in charge of traffic, plant operation, and general operating results with the title of Assistant Vice-President."

Dan Edgerly writes: "Sorry to miss the gathering of the boys, but I will have to miss this one. Read Seth Humphrey's books recently while confined to my room for several weeks. Found them most interesting and enjoyable. We will be waiting for his next one." — Herbert I. Lord writes: "I am awfully sorry that I am not going to be able to make the Reunion in Boston on June 6 and 7. My eldest gets through Hotchkiss this year, or will if he has a certain amount of luck, and I have promised to be present for the final wind up which is around the middle of the month. It would be out of the question for me to go East twice within so short a period. I am terribly disappointed.

THE TECHNOLOGY REVIEW

I had been hoping that the dates of these two doings would be sufficiently near together that I could make them both at the same time. I have not yet gotten over the kick of our Thirtieth Class Party and believe me it will take a good deal to keep me from any of the subsequent Reunions or Class get-togethers.

"Apropos of any Class news, while it is not a matter of record with you as Secretary, yet I can advise you that Bob Wallace and I held a '98 Reunion at Casablanca on February 21, and believe me, I think we did a good job considering the size of the crowd. Of course, the meeting was entirely unexpected. I was on one of the Mediterranean cruises, and he was negotiating a land cruise through the desert. Afterward we again met in Paris with Ted Sumner. I am surprised that Allston Sargent has not rushed into print with you in connection with the taking into the American Radiator Company family, of which we here are a part, of himself with his Campbell Metal Window Company. He should be proud of getting into such good company."

Jack House writes: "My oldest boy, Carleton, has two children, the youngest being John the Fourth. The four Johns were able to get together last summer and have their picture taken. My daughter, Elizabeth, is married and has one son, Robert Earle Cortney. My youngest boy, Arthur, has just passed his examination for Annapolis. While business is very bad, due to the Republican administration, I am hoping for better times after the next election." — Ralph R. Rumery says: "Met Nolte on the train to Albany last week, and we had a fine visit. Hadn't seen each other in twenty-five years." — Edmund C. Little is associated with Klipstein and Rathman, Architects. He superintended the erection recently of a plant in Philadelphia, and a modern candy factory for National Candy Company in St. Louis.

Everett W. Curtis writes: "I shall be with you at the Reunion in spirit and extend my heartfelt good wishes to you all from the sunshine and flowers of California. Like others in our class, heretofore more venturesome than myself, I have in my middle age leaped the continent, and continued the business of life anew in more pleasant surroundings, with the oases of Mexico only fourteen miles away!" — John D. Underwood says: "No news. Still selling fire insurance and awaiting the time when I will be able to hear my arteries hardening! Am the only member of the Class who still plays tennis (how about Van Lansing?) but not so good any more."

Thomas E. Tallmadge writes: "I've just returned from a trip to Europe that took in Sicily, a day or two in Italy and the Riviera, and some weeks in France and England where I turned my attention to the present instead of the past — modernism instead of medievalism. The world moves!" — Edward B. Richardson says his work as a consulting engineer is very varied. He put in the water works, pumping engine, pipe laying and stand pipe for the town of Falmouth,

1898 Continued

Mass. He has installed the heating and ventilating systems for two large Harvard University units of the new housing plan.

George D. Huntington writes: "Sorry it is impossible to get East this spring. If the nation or individual with no history is to be accounted happy I should be in the seventh heaven. I am still trying to look after the business of the Crosby Company, such as there is of it in this part of the world." — Edward M. Taylor is employed by E. I. duPont de Nemours and Company at Wilmington, Del., as Vice-President and Managing Director of the duPont Building Corporation; Vice-President of the Hotel duPont Company; and Vice-President of the Playhome Company. As such he is interested in office building management, hotel management, and theatre operations. — Irvin H. Kaufman writes: "For thirty-two years my life has been routine, routine, routine. Some joy, a little sorrow, but mostly the small pricks and stings of this feeble existence (compare Shakespeare). I see Colonel Robert Starr Allyn from time to time, as I frequently do some small time inventing and then Bob and some guy in Washington hand me a flock of inventions previously made to show I am as original as the story about the two Irishmen. I was rather interested in the note in *The Review* about Paul Johnson. That fellow does certainly make me ashamed. From thermostats to radio to motor boats, and I suppose if he were not so fat he would be a Lindbergh."

W. W. Rush writes: "Have been with the Franklin Railway Supply Company, Inc., 60 East 42d Street, New York City for the past ten years. My work is entirely in the service department." — We list the following accomplishments of William Brewster: For the past eleven years he has been supervising the location and construction of highways through the hills of West Virginia, as federal engineer. His oldest son was graduated from Harvard in 1927, and his second son was graduated from West Virginia University in 1929. His second son was on the football and wrestling teams for three years. His daughter is at Vassar in the Class of '31. He is President and Director of the General Lewis Hotel Company, and a director of the Lewisburg Ice Cream Company, Bell Oil Products Company, and Bealbone Land Company.

Thomas M. Roberts writes: "If I could be present with you in June, I'd sing, 'I'm not half as young as I used to be,' but I am still holding down a job, the work of which I like. And best of all, I like my chief, of the mechanical and electrical equipment division of the supervising architect's office, Treasury Department. This office might be in some other department, and may be some day. It has charge of about 1500 buildings, consisting of post offices, court houses, immigration inspection stations, and so on, located in all quarters of our beloved country. We are equipping some new big office buildings here in Washington, D. C. As associate electrical engineer, I am just an average frog in Uncle Sam's big Civil

Service political swimming pool, but I am glad I am an engineer, for engineers, next to chemists, are the pioneers who are putting scientific technology into the front line of progress."

William Dana writes from Nice of the pleasures of life on the shores of the Mediterranean, of his musical work there, and of his plans to visit Geneva to attend the meetings of the League of Nations in September. — Lewis Streng has a son who is a student at Technology. — We have reprints of several papers and addresses of Milan V. Ayres, Analyst of the National Association of Finance Companies: "Startling Facts Regarding Retail Distribution;" "Installment Selling and Industrial Recession;" "Volume Distribution Makes Motor Sales Financing Necessary;" and "Eligibility of Finance Company Paper for Rediscount."

Albion W. Shaw, who has long been with the insurance department of Stone and Webster, has associated himself with Field and Cowles of 40 Broad Street, Boston. — Seth Humphrey's latest book, "The Prairie Frontier" contains much of personal experience and almost direct knowledge, since his parents were pioneers beyond the Mississippi River. This book has recently been accepted for publication by the University of Wisconsin Press with the statement that they consider it a valuable contribution to the history of the West. It is a far greater compliment to have a book taken by an institution of learning because of its historical value than to have it accepted by a commercial publishing house because they think it will sell. Seth has just returned (August 25) from several months in rural England in search of literary material.

Horace T. Smith wrote the following in his usual cheerful tone last May: "It will, in all probability, not be my good fortune to be able to be present at the '98 banquet. I am still in Bridgeport doing some consulting work, but not actively connected with any particular concern. I am still a bachelor. Although I am 53 next month, I have not as yet lost my teeth or sense of humor, though I have parted with the better portion of my hair." We have just received in mid-August the sad news of his death at Bridgeport, Conn., July 17. Horace was probably the most joshed man in our Class during our student days, but he always took it good naturedly, believing, as was really true, that we had at heart a real affection for him. Since graduation this feeling for him has strengthened and we, particularly those of the chemistry course, have greatly enjoyed seeing him the few times that he has been around. That he has always felt a great affection for Technology is shown by his bequest of the bulk of his estate estimated at \$50,000 to Technology, to be used for scholarships for worthy students, preference to be given first to graduates of East Bridgewater, Massachusetts High School, and next to Bridgeport, Connecticut High School.

We have received two other sad messages: Owen L. Leonard died March 7, 1930, after a short illness. Leonard had

lived in Denver, Colo., a good many years where he was with the Telephone Company. He had several children and he is survived by a widow. — Robert E. Daly died on April 19, 1930. Daly was a dentist in Brooklyn, N. Y. Those who attended our Twenty-Fifth Reunion remember the pleasure of having Daly with us then. — ARTHUR A. BLANCHARD, Secretary, Room 4-160, M. I. T., Cambridge, Mass.

1899

To the Class of '99 greetings and explanations. Greetings in a spirit of good will. Explanations because there was a blank for '99 in the July issue of *The Technology Review* where there should have been news. Somewhere between my office in Washington and the editor's desk in Cambridge there is a bourne which should be known as the Port of Missing News. If it could be discovered, there would be found under date of May 22 several items which are not strictly news now, because of the lapse of time, but are of interest, nevertheless, to the Class of '99. I shall, therefore, use the blue pencil liberally and put in the past what was in the present so that you may know all of the comings and goings of our members.

H. C. Greer, publisher of the *Morgantown Post*, formally declined the appointment as head of the Civil Service Commission which was offered him by President Hoover last spring. This post ranks in importance with the chairmanship of the Interstate Commerce Commission. Greer did not give his reasons for declining the post, but his classmates are glad to know that he was honored by being asked to serve. From Atlanta, Ga., comes the information that C. A. Smith was appointed chairman of the Ways and Structures Division of the American Electric Railway Engineering Association, in recognition of his outstanding services. For three years past he has served as vice-chairman and has also been chairman of the Wood Preserving Committee of the Division. The Ways and Structures Division of the Association is divided into fourteen special committees. With almost 30 years of experience in street railway construction and maintenance, Mr. Smith is recognized as one of the leading authorities on this work in America. Shortly after graduation he went South to build some tracks for the old Atlanta Rapid Transit Company. After completing this work and similar activities in Birmingham, Ala., as well as for the Florida East Coast Railway Company, he went back to Atlanta as roadway head in 1906.

Norman Seavey writes from Hollywood, Fla., that the lure of the Southland has captured him, and he has bought a bungalow where he expects to spend the winters with his family, and where he will look forward to seeing old friends who visit Florida in the winter. Norman paints a fascinating picture of palms and sand and sea and Spanish architecture. His recreations are pool and ocean bathing, golf and fishing, not to mention horse and dog races. Should the visitor

1899 Continued

find this not enough distraction there is the delightful alternative of touring across the Everglades to cities on the Gulf side of the Peninsula. There is, in addition, the historic old city of St. Augustine, and the citrus section. There is — well, there is not space enough in one small column to list all of the delights mentioned by Seavey, and if his letter had been received one month earlier, your Secretary would have stopped in passing "for to admire and for to see."

The All-Technology Reunion has passed into history. Twelve members of '99, tried and true, attended the exercises, of which you have doubtless read elsewhere. All 12 put their feet under the table and their elbows on it at Walker Memorial one night and ate and talked. The room was hot, but the boys kept comfortable by taking off their coats. Those present were Kinsman, Rickards, Loud, Waddell, Parker, Lynch, Richmond, Graves, Sherrill, Tufts, Barry, and Brown. Mork, Skinner, and Horton could not get to the Class dinner but attended the banquet on Saturday night. To Arthur Brown we are indebted for the arrangements and report of the meeting. He says they had a grand time, and though he had not seen Rickards, Waddell or Lynch since our days at the Institute he recognized them without any aids to memory. George Lynch's advent was entirely unexpected as he lives in Los Angeles, but he scatters himself pretty well all over the country in carrying on his business of filtering dust and fine solids from smoke and flue gas. Lynch and Rickards missed the '99 Class Reunion in 1929 because on the very day of the Reunion George's daughter and Rickard's son were graduating from college in Los Angeles and New York, respectively.

Several of the boys were globe trotting for divers reasons. Lew Emery planned and promised to be at the All-Tech doings if he was in the country. I assume he was not able to say good-bye to Europe where he went in the spring. Etheredge Walker was in South Africa, or en route home, when the last notices went out. Business or pursuit unknown. Snow sailed for Russia on May 9 to be gone for some time. Norman Rood sailed for Europe for a rest with his family on May 15. We shall expect news for later issues from those who have been traveling the world so wide!

Churchill, moving spirit of the Churchill Weavers, Berea, Ky., wrote apologetically saying he was in Washington sometime in June, and as he had never been here before he "sight-saw it inside and out and flew over and went away happy," but guilty as he had failed to call the Class Secretary. He was told that he would be absolved of his iniquity, if he would but provide us some news from Kentucky for the column. He complained that I was too hard on him, that I shouldn't expect much from him in the way of news from a small country town in Kentucky. Whereupon, without pause, he proceeded to regale me with the tale of a sacred cow and a wonderful calf which, however, was a glutton as it drank most of the cow's milk. What was

left, when there was any left — and if the drought didn't let up there wouldn't be enough even for the calf — was good, rich, unpasteurized Jersey milk. Churchill crowed over the rest of us who must drink ours pasteurized and bottled. It seems they get milk from cows in Kentucky instead of bottles. Then Churchill went on to inform me that they, The Weavers, have a new design, a new color, and a new patent. Also they are coming out with a new booklet in natural colors this fall. This is stepping out for The Churchill Weavers who have heretofore been advertised almost solely, like Mellen's Food, "by their loving friends." The best news from that country which has reached his ears of late is a comment by his little granddaughter, two years old, which I quote verbatim. The driver said to her, "Now, Peggy, you drive." She looked him in the eye ingratiatingly and said, "Honey, Ah caint!" Churchill commented feelingly — "Shades of New England Ancestry!"

It is with regret that I must announce the death of Edward G. Henrich of Buffalo, N. Y., on January 27, 1930. Also that of James Finlay Chapman, Pueblo, Colo., who with his daughter, Gertrude, was killed instantly in an automobile accident in April, 1929. These two notices were received in my office early in May. A brief but interesting article by David Gray appeared in the June 30 issue of *Product Engineer*. The article was entitled "Pressed Glass in Metal Products." — W. M. CORSE, Secretary, 810-18th Street, Washington, D. C. ARTHUR BROWN, Assistant Secretary, 53 State Street, Boston, Mass.

1900

Notice has been received of the marriage of Miss Margaret Patch, daughter of Mr. and Mrs. James Alfred Patch of Stoneham, and Gardner Atherton Norton, son of Professor and Mrs. Arthur Edwin Norton of Belmont, on June 26 in the First Baptist Church in Stoneham. The bridal couple were married on the same silk prayer rug on which the bride's parents were married 25 years ago in Beirut, Syria. — A letter from B. R. Johnson associated with the law firm of Jeffery, Kimball and Eggleston of New York City reads: "Doubtless I have been set down as one of those not having enough interest in the Class or Technology to bother even to acknowledge notices or letters about reunions and so on. But that is by no means the case. It was difficult this time — as last time — for me to come, but I wanted to and hoped it might be managed. I couldn't promise and it is well I did not, but I am writing now to thank you for the interesting account of what went on and also for all that you have done so effectively in arranging and carrying out the Reunion plans. I know you had a great time and wish I might have enjoyed it, too."

During the summer the Secretary had a telephone conversation with Hurd and he said that he was feeling pretty well and wanted to be remembered to all the

THE TECHNOLOGY REVIEW

boys. — A card in the *Harvard Alumni Bulletin* calls to the reader's attention the fact that the new Harvard buildings were fitted out by selections from the Conant Line. Recently inquiry brings out the welcome news that J. B. is getting along finely up in New Hampshire and expects soon to be fully recovered from his illness.

One of life's few remaining pleasures was experienced by the receipt lately of a letter from Woodward down in Alabama, containing a very generous contribution to the Class fund. Like other millionaires, Woody has a hobby which is running a baseball team. While in Technology he was considered in a class with the best college catchers both by the press and by the writer who had a good chance to study him. For the last 20 years he has owned the Birmingham team of the Southern Association, which in 1928 won the pennant and in 1929 the pennant and the Dixie Series. Woody has developed the following list which, if playing together, would finish in the first division of either one of the big leagues. Spencer and Gooch, catchers; Neun, first base; Traynor, second base; O'Rourke, third base; Byrd, West, Haas, and Barnes, outfielders; Crowder, Hadley, Wells, Stewart, Whitehill, Morrison, and Grimes, pitchers.

A very nice letter has come in from Phil Ripley of the American Woolen Company at Andover, Mass., regretting the fact that he could not be with us at the Reunion and wishing to be remembered to all his friends. Ripley is back home again after a long siege at the Phillips House in Boston and is slowly recovering from his recent illness. — With regret we record the passing of George Burdett Ford, IV, who died in New York on August 13. "He was born in Clinton, Mass., June 24, 1879, and was graduated from Harvard in 1899 and received the degree of S.B. from Technology in 1900, and an M.S. the next year. He also studied at the École des Beaux Arts, Paris, from 1903 to 1907. From 1907 to 1917 he was connected with a firm of architects in New York and was adviser to the Russell Sage foundation plan of New York and vicinity. He served as city planner in many cities and towns, including Somerville, Worcester, Springfield, New Bedford, and others. He also gave many lectures on city planning and spoke on town planning at Columbia University from 1914 to 1916.

"After the war he was engaged by France in replanning Rheims, Soissons, and other devastated regions. He was a member of the American industrial commission to France in 1917 and deputy commissioner of the American Red Cross in France that year. For the past five months he was director of the regional planning association in New York. He was the author of 'City Planning Progress,' 'Out of the Ruins' and other books. He was a chevalier of the Legion of Honor and President of the American City Planning Institute and of the national conference on city planning. He was Vice-President of the Congress Inter-

1900 Continued

allie d'Urbanisme. He was a member of the Harvard Club of New York and the Cercle Volney of Paris."

There are undistributed four of the 30 year books. If any one is overlooked, notice to the Secretary will bring prompt response while they last. Of the books sent out, 31 are unpaid for at this writing in August, which is not so good. Will any of the delinquents reading this, please hasten to remit so that Fitch can close up his books? — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

Your Secretary has returned from England just in time to compile this letter. Since writing you last, the usual Class letter has gone out with the usual enclosures, among them the gratifying financial statement. When I say gratifying I mean that I am pleased to show a balance on the right side, grateful to those who made it possible, and tenderly solicitous as to the welfare of those who have never responded to my modest appeals. We had the All-Technology Reunion some time ago, as you may remember, and I have already sent the editor my comments on that festive occasion. It was no more than a try-out for the really important Reunion which comes next June and signalizes the 30th anniversary of the year when our Alma Mater reluctantly, and how, parted with the brightest jewels in her crown. That means you.

Speaking of the brightest jewels, I have just heard from Stuart Miller who has thus broken a silence of many years. Stuart has retired — more of that anon — but in order to keep his hand in he is Treasurer of St. Paul's Cathedral in the diocese of Marquette where he resides, Director of the Marquette Club, President of the Rod and Gun Club, and Vice-President of the State Rifle Association. Some of you may remember that Stuart was high gun of the Technology Gun Club, a convivially social organization which occasionally slaughtered clay pigeons and more frequently wrought greater havoc with more edible comestibles. Stuart is evidently true to his earlier tastes and inclinations but I pause a little at the word retired. I cannot but think of the announcement of the Strawberry King prior to his coronation that he, too, had retired, and I am equally mindful of the fell results of his masterly inactivity which inevitably led him back to that career of economic and industrial superactivity in which he is now engaged. Of course, Stuart can always shoot a few vestrymen and thus interject a hint of sunlight into his life of drab and monotonous desuetude, but from my experience of them they would have to be shot sitting, and that is after all no occupation for a sportsman. "Sporting to the last. Hawkins, catch him on the rise." Something tells me, however, that Stuart will emerge from his retirement or else my recollection of him has become sadly colored by the years. I should suggest that Stuart attend the 30th Reunion, bringing with him such munitions of

war as seem apposite, and I can assure him first-class sport. I have even a few relatives that I would be willing to sacrifice if that would prove an inducement and help to fatten the bag.

One Ellis Fuller Lawrence, still of Portland, Oregon, and still manager, director, or president of apparently all of the boards on the Pacific Coast, writes to say that he and Bill Holford, who by the way is still a boy scout, are building the new Clinic Building for the University of Oregon, a huge public market building, and is planning the Eugene Campus for the University. I don't know just what a Eugene Campus is. An Eugenic Campus would appeal to me as a highly appropriate addition to a co-education institution, or perhaps the public market is in some way associated. Anyhow Ellis is coming on for the 30th and he can tell you all about it. The boy Casanovas please take notice. Ellis wants broiled live lobsters when he lands here so I should suggest to Stuart Miller that he bring with him a landing net unless he prefers the older, simpler method of a bit of red flannel about the big toe. Ellis also informs us that Arthur Trenholme is breaking in to the public press as a successful golfer. All in all we are a fairly sporting community if we add Gordon Thatcher's well-known mastery of the tennis racquet. Thank God, however, Gordon dropped out of our leading commercial sport before the days of Tilden. Turning back for a moment, there are a lot more snappy things that I could say about the boy scout but he may come to the Reunion and, well, you know how it is.

Farnum Dorsey has become patent attorney for the Vacuum Oil Company. He also had a son born last April. On the first I congratulate; on the second I offer my heartfelt sympathy. Something tells me that this will not be accepted in the same warm spirit of kindness in which it is intended.

Frederick G. Clapp, our peripatetic member (no reflection on LeBosquet), after his Near East and European experiences came to Bronxville in March of the current year for a temporary residence at the Tudor Arms. This seems to me personally like an anticlimax, but I may be wrong as Fred's headquarters are still in Paris. Anyhow, he writes me that he has been making reports on dam — and apparently as an afterthought — on reservoir sites. By the time this letter is penned he will probably be investigating the oil properties in and about the South Pole which were recently reported by Lieutenant-Commander-Captain-Admiral Byrd. I think I am one lap a head. A. K. Isham, who started in life as a respectable mechanical engineer and settled in Seattle, Wash., where I saw him in 1919, writes me that his present occupation is "experimenting." I've tried that a number of times and so far have avoided both entanglement and court procedure. Isham further adds, though I presume taking up a different line of thought, that electrical effects of the chemical combinations of elementary

gases depend upon frequency and not voltage. This may be an esoteric form of expression. I, too, have found frequency more effective. Turning to yet another line of thought, he adds that nitrates can be made in commercial quantity by a cold spark of proper frequency — to which I will add that something might be said for the humble though loathsome bacterium. Taking yet another lead, he concludes that frequency is possibly the answer to all combinations. This opens up a wonderful vista for discussion and I think it would be well perhaps, in view of the editorial attitude of the Journal where these notes are forced to appear, if we postpone it until the Reunion. By that time I feel sure that Isham will be able to give us the protocols of some interesting illustrations of his several theses, and there are other members of the Class in a position to debate this question with intelligence and such fluency as their native caution warrants.

In my next letter I hope to convey the first premonitory rumblings of the Reunion plans. Since there ain't no business no more and no prospect of a resumption (Mr. Hoover's resolute and noisy optimism will certainly kill any well-meant effort at a comeback) there is no reason why any of you should deny yourselves the joys of foregathering because of business claims. Come on and eat a live lobster. It is succulent and if properly prepared in the kitchen, relatively harmless to the seasoned gastronome.

My best wishes for the winter. — ALLAN W. ROWE, *Secretary*, 4 Newbury Street, Boston, Mass.

1906

The Class was well represented during the All-Technology Reunion held on June 6 and 7. The Class dinner was held at the Winchester Country Club on Friday evening, June 6. The dinner was open to the ladies and the total attendance was 30. Following is a list of those present: Herbert J. Ball, Mr. and Mrs. Frank A. Benham, Mr. and Mrs. Clarence E. Carter, Edward S. Chase, Ralph S. Clarke, Henry E. Darling, Mr. and Mrs. William F. Farley, Mr. and Mrs. Floyd M. Fuller, Mr. and Mrs. William W. Gaylord, Mr. and Mrs. Henry A. Ginsburg, Thomas L. Hinckley, Daniel P. Kelley, Burton W. Kendall, Mr. and Mrs. James W. Kidder, Sherley P. Newton, Mr. and Mrs. Halsey R. Philbrick, Mr. and Mrs. Edward B. Rowe, Mr. and Mrs. Andrew B. Sherman, Miss Sherman, and Philip B. Stanley. An analysis of this list shows 11 ladies and 19 men. This occasion was a further demonstration of the success of Class affairs which are open to the ladies. Everyone seemed to have a good time. The Secretary and his assistant made a few informal remarks at the conclusion of the dinner. The favors, "the witch bowls" filled with sweet peas — which were provided for the ladies — seemed to make quite a hit.

After the dinner, some of the company accepted the Secretary's invitation to go to his home in the vicinity of the Club to enjoy bridge and dancing. The Class

1906 Continued

dinner marked the presence of Andrew Sherman's daughter, the Class baby. For those who were not present, it might be added that the Class baby is now an attractive young lady.

There were many comments during the evening on our Twenty-Fifth Reunion which is to be held next year. Those who attended the Twentieth were particularly interested in the plans for the Twenty-Fifth, and it was agreed that a supreme effort should be made to make next year's reunion the best ever. The Reunion at Swampscott did not afford much opportunity for the Class to get together, but quite a few attended. We had about 16 representatives in the parade of Classes. The Class banner was borne by Charlie Wetterer's boy, who being young and husky — particularly the latter — was just the man for the job. Among those who joined the parade were: Mrs. Wetterer, Miss V. Smith, Mr. and Mrs. William G. Abbott, Howard P. Barnes and Howard H. Brown. Some of the members of the Class were rather timid about parading, so our delegation did not include all those who attended the outing.

The Class of '06 filled two tables at the Saturday night banquet at the Statler, or a total attendance of 20, in addition to Henry Darling and his wife who had to find locations at a third table. The following made up the two tables: Mr. and Mrs. Floyd M. Fuller, Mr. and Mrs. Henry A. Ginsburg, Mr. and Mrs. Charles L. Kasson, Mr. and Mrs. James W. Kidder, Mr. and Mrs. Halsey R. Philbrick, Mr. and Mrs. Edward B. Rowe, and Mrs. Charles Wetterer and her son, and these stags: William G. Abbott, Howard P. Barnes, R. Black, Howard H. Brown, Burton W. Kendall, Robert J. Lyons. After the banquet, some stayed for the dancing. Those of the Class who attended the Reunion all admitted it was well worth while. The final banquet in particular was a notable occasion. The Class was represented on the Reunion Executive Committee by Ned Rowe, who took a very active part, especially at the Swampscott Outing. There were many who were unable to attend and who sent their regrets. We will forgive them if they will only show up next year.

Some time ago, the Secretary received a letter from Roswell Davis, Secretary of the Class of '05, including some references to '06 men. The letter was written by Harry M. Nabstedt to Davis, and refers to meeting Charles T. Leeds, I, who is associated with W. K. Barnard and A. F. Barnard, under the title of Leeds and Barnard, Consulting Engineers, while attending a meeting of the A. S. C. E. at Sacramento, California.

Sam Greeley, XI, of Pearse, Greeley and Hansen of Chicago, was present and advised of the death of Charley Saville. Saville had been in Dallas, Texas, for a number of years where he had served as Director of Sanitation for the City of Dallas, had been Secretary of the Chamber of Commerce, and for the last few years had been in the insurance business. The following clipping was received from Charles F. W. Wetterer: "Professor Her-

bert J. Ball, Head of the Textile Engineering Department of the Lowell Textile Institute, has been elected Chairman of the Textile Committee of the American Society for Testing Materials. The Textile Committee, commonly known as 'D-13' comprises representatives of nationally known producers and consumers of textile yarns and fabrics. Their purpose is to prepare standard specifications for textile materials and standard methods of testing them. The Committee meets three times each year, once in the North, once in the South, and once at Atlantic City." We congratulate Ball on his election. — JAMES W. KIDDER, *Secretary*, 8 Harrison Avenue, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

1907

On the afternoon of June 6, Ralph Hall, Bert Bancroft, Oscar Peabody, Tom Gould, Harold Wonson, Frank MacGregor, Lawrence Allen, Howard Chase, and Harold Farrington started the ball rolling for an informal reunion of our Class at the Charles River Country Club in Newton Centre, Mass., by playing golf on the attractive and interesting course that the Club provides. The Class Secretary was also on hand late in the afternoon and walked around nine holes with one of the foursomes. In the evening these men, with the addition of Fred Moses, Leon Chaffee, Oscar Starkweather, Ralph Hudson, Charlie Allen, Alexander Macomber, Harold Reed, Don Robbins, Sam Marx, Bob Albro, George Crane, Bill Otis, Hermann Mahr, Gilbert Small, John Frank, Ed Squire, Sam Coupal, Ralph Lowe, and Kenneth Moller enjoyed a fine dinner at the Club after which the Secretary gave news items regarding various Class members, and our active and influential President, Macomber, presided during informal discussion as to plans for our Twenty-Fifth Reunion in 1932. It was generally agreed that this Reunion should be a three-or four-day affair and should be held at some place on the southern shore of New England where the advantages of the ocean can be combined with good golf, good food, and good entertainment. It was particularly interesting to your Secretary to note the fact that while most of the men at this Reunion were regular at such affairs, seldom, if ever, missing one, there were several who have not been present at any class affair for many years. It was especially fine to see Howard Chase, Leon Chaffee, Ralph Lowe, Bill Otis, and Bob Albro. We hope they had a fine enough time so that in the future they will be regular attendants at '07 reunions.

The following telegram was received during the evening from Louis A. Freedman: "Would have given anything, dear Classmates, to have greeted you in person this evening and sorry to have been with you only in heart and spirit. My best wishes to our Class and good luck with prosperity for many years." — Ralph Lowe, an '07 affiliate, who appeared at this gathering entirely un-

THE TECHNOLOGY REVIEW

expectedly, is located at 941 Main Street, Worcester, Mass., with the DeWalt Oil Burner Company.

An item in the Boston *Herald* of July 23 announced that Professor Phelps N. Swett of Middlebury College was elected Vice-President of the National Bank of Middlebury, Vt. Phelps has been at Middlebury as a professor since 1909, and has been a director at this bank for a number of years. — On July 1, Harold Wonson left the W. H. McElwain Company, with whom he had been associated for just 20 years, and on July 15 he started his connection with the Commonwealth Shoe and Leather Company at Whitman, Mass. Harold writes: "Haven't any title, but the general manager handles buying and manufacturing, the sales manager handles selling, and I'm trying to handle everything else — costs, orders, production, pay roll, bookkeeping, accounting, and so on. Most of my work so far has been that of analysis. I'm trying to find out what everyone does, why they do it, and what can be done to simplify and coordinate the various departments and make them more efficient." His family have moved from the former New Hampshire home and his home address is 455 South Street, Bridgewater, Mass.

In the Boston *Sunday Globe* of June 29 appeared a three-column article with illustrations entitled, "Boy Publishers Show Genius for Selecting Lively News," which related how Elmer Armington, age 12, and Graham Alvord, age 13, both of Melrose, Mass., publish a weekly paper called the *Weekly News*. Graham is the son of Henry B. Alvord of our Class, professor of civil engineering at Northeastern University, Boston. In one issue of the paper appeared the following: "Mr. Alvord celebrated his 45th birthday. He got a new shirt, a couple bars of candy, and many other good things. In the evening Mr. and Mrs. McKenney came over. After playing bridge for a while, they had refreshments." It is reported that Henry wasn't too well pleased with this item, but he is said to be the only customer who ever registered a protest.

Carl Bragdon is chemical director and secretary of Ault and Wiborg Varnish Works, Inc., of Cincinnati. He took his wife and three daughters to England in the summer of 1929, and left the eldest, a Smith College junior, in France for the winter with 40 others of the class specializing in French. He also made a hurried business call at Naples. His second daughter, Helen, will be a sophomore at Smith this winter. Carl says he had a chat with Frank Shields, V, in Indianapolis last spring and that Frank's office closes at two o'clock every day and he goes out and plays golf and raises chickens.

The following letter from Lester Brock, received last May, will be as interesting to you as to your Secretary. Will some members of the Class do their best to get the point of view regarding a Secretary's problem that Lester has acquired? His reference to "pushing out

1907 Continued

bottled smoke" comes from the fact that he is manager in Akron, Ohio, for Godfrey L. Cabot, Inc., manufacturers of carbon black. "I have been saving your return post card in the fond hope that something would turn up to let me loose for Boston. The old wheel of industry spins so rapidly that it keeps me out on the spokes or the fellow most of the time and it is very difficult to reach the Hub more than two or three times a year. It was necessary for me to be there in April, and I see no possibility of making the trip again in June. If any opening arrives between now and the fourth, you may be sure that I will wire you promptly.

"I haven't sent back your questionnaire, for I am apparently just one of the average populace. I haven't written any books, been arrested, or confirmed. We have no new children, but have retained all that we originally ordered. Promotions are few and far between. Thank God, I haven't changed my job, but am still pushing out bottled smoke to the rubber industry. Pushed out about 25,000,000 pounds last year, and whatever tires you have on your car, you are probably riding around on some of the results of my sales efforts.

"I have a secretary-treasurer's job myself now, being in charge of the Akron Rubber group, which is a branch of the American Chemical Society, and you can be perfectly sure that I sympathize with you in your efforts for the last 23 years. I know what it means to have a dinner in prospect without any assurance on the day of the feast whether you are going to have 25 or 250 present. I know what it is to send out 1,000 questionnaires and get back 15. I have learned that there are some fellows in every group who always answer everything promptly and some who wouldn't answer if they were placed on the rack. I think that there should be a national secretary-treasurer's association which would carry a retirement fund with it. Personally, I have ideas on retirement. Every able-bodied man should be retired on a comfortable annuity at 45. In that way he could still taste of life and would have had his resources developed sufficiently so that he would not die of inertia for lack of activities. I can think of a thousand things that I could do very pleasantly for the next 35 years. At my present rate of progress, however, I will probably be retired when my life insurance is collected. I hope you have better luck. If you think of it, please give the boys my very best regards at the dinner. Also accept my very best wishes for your own personal comfort and happiness. I will hope to see you sometime during the summer if I come East again."

Dick Woodbridge sent in the following letter: "This is indeed a small world, and '07 men are scattered all over it. Imagine my surprise in catching sight of a familiar figure disappearing around the corner of a street in Havana. I started in pursuit and finally caught up with none other than our classmate Clarence Lamont. Montie was surprised to see me

and was delighted to show my family and me other scenes in Havana which had been set up in the Pathé Studio at Culver City, Calif., for the filming of a thrilling underworld picture to be called "Her Man." Sorry that I cannot divulge anything more about the picture, but Montie says it is going to be a great picture, and judging from the several scenes we saw shot, I would say don't miss it when it comes to town. Montie is in the technical end of the movie business, and being a bit technical myself, the family and I spent several delightful hours at the studio, thanks to the courtesy of the Pathé officials.

"My family and I left Wilmington June 14 for a six weeks' trip to the Pacific coast and Canadian Rockies, and we had a wonderful and extremely satisfactory trip which included Pikes Peak, Grand Canyon, San Diego, Mexico, Los Angeles, San Francisco, Portland and the Columbia Highway, Seattle and Mt. Rainier, Victoria, Vancouver, Lake Louise, Banff, Great Lakes, Toronto, and Niagara Falls—all without a rainy or unsatisfactory day for sight-seeing." — BRYANT NICHOLS, Secretary, 2 Rowe Street, Auburndale, Mass. HAROLD S. WILSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The Class Dinner of '08 was held last June during the All-Technology Reunion at the Belmont Springs Country Club, and it was by far one of the most enjoyable affairs we have ever had. We had the pleasure of entertaining the ladies, and as it was the first time they had ever been present, it certainly was an important meeting. There were 26 classmates present and with 23 ladies, it made quite a nice gathering for the dinner and evening's entertainment.

Cookie, who was chairman and in fact the entire Reunion Committee, had the tables arranged in a large letter E in the main dining room, and, although the weather was rather hot, with the windows on both sides of the room open giving us what breeze there was, it was not uncomfortable. The dinner was excellent and Cookie and the steward certainly deserve a vote of thanks.

Just as we finished dinner Jeff Beede showed up with his moving picture machine and we were able to see ourselves again at the Twentieth Reunion (two years ago) at Osterville. Jeff also had a couple of comic reels which were enjoyed by all. After that the orchestra got busy for those who wished to trip the light fantastic. Others gathered around the card tables and the rest sat around and talked in the comfortable lounge or out on the broad piazzas where one could look out over the golf course and the rolling hills in the distance, all bathed in moonlight. During the evening Henry Sewell's donation to the Reunion was thoroughly enjoyed. The gathering broke up at 11 P.M. as the next day was going to be rather strenuous with the Swampscott outing and the banquet in the evening.

Those present at the dinner were: Bill Booth, Burt Cary, Nick Carter, John Caton, Clarence Clark, Lang Coffin, Cookie, H. H. Damon, Myron Davis, R. E. Drake, Les Ellis, Paul Esten, George Freethy, Pop Gerrish, Lynn Goodman, Winch Heath, Ted Joy, Karl Kennison, Doc Leslie, Arthur Longley, Linc Mayo, Will Medlicott, Miles Sampson, Henry Sewell, Arthur Skillings, and Joe Wattles.

The next day, Saturday, the following men were present at Swampscott: Nick Carter, Lang Coffin, Herb Cole, Cook, Myron Davis, Dexter, Toots Ellis, Pop Gerrish, Kedy, Doc Leslie, Arthur Longley, Linc Mayo, Medlicott, and Joe Wattles. Until 11:30 A.M. the time was spent in greeting old friends. Then came the grand parade followed by the picture of the entire gathering grouped on the rocks in front of the hotel. A buffet lunch was served after which we participated in different sports. The writer, who is pinch hitting for Nick Carter, didn't attend the banquet at the Statler, so cannot say who was present, but the next issue of The Review will give details of this affair.

The first dinner and meeting of 1930-31 will be held on the third Tuesday in November (the 18th), as the second Tuesday is a holiday. — HAROLD L. CARTER, Secretary, 185 Franklin Street, Boston, Mass.

1909

This is the first issue of the year, and with it your Secretary sends you all his greetings and renews his yearly request for your aid in making these Class Notes more interesting and enjoyable. Letters about yourself, or other members of the Class, are especially appreciated. Under the able leadership of Tom Desmond, the All-Technology Reunion was a most enjoyable gathering of Alumni from far and near. Nearly fifty of our own Class attended one or more of the various events. Some of these men had not been with us recently so that we were particularly glad to see them.

The only strictly Class function was the Class dinner, which was held at The Sheraton on Friday evening. About 35 were present, and after a very delicious dinner we gathered on the Esplanade for a while to see the fireworks on the Basin and the striking electrical illumination of the Technology buildings across the Charles River. After the fireworks Jim Finnie and some of the stags retired to a private room to swap yarns, while eight of the other men and their wives indulged in a game of auction bridge. Altogether it was a most enjoyable affair. Mr. Sanford, the manager of The Sheraton, was very solicitous of our welfare and his careful attention to the details contributed much to our comfort and pleasure. Fred Faulkner dropped in from Halifax one day this summer. He is teaching at the Nova Scotia Technical College, where he has been for a number of years. He tells me he has acted in a consulting capacity on a number of municipal problems and is now President of the Halifax

1909 Continued

Rotary Club. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, General Foods Corporation, 250 Park Avenue, New York City. MAURICE R. SCHARFF, *Assistant Secretary*, First National Bank Building, Pittsburgh, Pa.

1910

We had a grand time at the Reunion last June and had a large turnout at the dinner, even if the outing didn't bring forth such a crowd. There were 46 of us who met at the American House on Friday evening, June 6. It was a terrifically hot night, but we took our coats off and didn't mind it much after we got started. We sang Technology songs and Class songs and after dinner each man got up and told how many wives, children, and jobs he had and a little of what he was doing. Each man also told what he could of other classmates and it took us all back 20 years and renewed our youth.

It was voted to elect a president and secretary every five years, and Frank Bell of Texas, our most distant guest, was elected president for the next five years. Your Secretary was reelected. Nat Seeley wasn't sure he belonged to '10 until we got him to the dinner and then he agreed that he was at home with our bunch. Bert Wohlgenuth was on from West Virginia, Allen Gould from Cleveland, and Cliff Hield from Minneapolis. New York was well represented and Technology sent over her quota of professors.

Ludwig Waters showed up at the All-Technology Banquet on Saturday as did Dick Bicknell. Sunday was a rotten day, but did not prevent 15 of us from convening at the Mayflower Inn at Plymouth and having a good time in spite of the rain. John Ahlers, Bert Wohlgenuth, Frank Bell, Charlie Greene, and Horace Stump braved the elements to play a little water golf. Paul Thompson, whose fear of frost kept him away from the dinner where we sweltered in tropical heat, drove over from Middleboro to see his classmates for the first time in 21 years. Paul beat the gun by leaving Technology at the end of his junior year and getting married. He has a 19-year-old-daughter thereby holding the record so far as we know. Charlie Greene has six children and was awarded a prize for the most prolific of those that gathered at Plymouth. Frank Bell received a prize for coming the longest distance.

Your Secretary would welcome expressions from members of the Class as to their wishes in the matter of having an outing every spring. If you have any suggestions about the best place to go, send them in. In some ways it is a disadvantage to have our five-year reunions jibe with the All-Technology Reunions, as many men cannot spare time for both, and the week-end idea was broken up this year by the big banquet Saturday night.

I don't know whether Horace Stump was impressed by the prosperous appearance of us married men, but I have

the announcement of his marriage on August 20 to Miss Bertha Baldwin. — The mail also brings an excerpt from a new history of Washington which contains a biography of Kenneth P. Armstrong. Kenneth has been chairman of committees on legislation, is an authority on public utility and zoning matters, and has been prominent in Masonic and business associations. — Gordon Hawes wrote that he was stranded in California and could not get on to the Reunion. — Carl Sittinger was sent out of town on a job just at Reunion time and wired his greetings to the crowd. — Ray Jacoby didn't make the dinner but drove up to Plymouth for a brief visit with his wife and half a dozen kids. He claimed that they were only a sample of his brood, but we suspect he borrowed a few to make a showing. — DUDLEY CLAPP, *Secretary*, 40 Water Street, East Cambridge, Mass.

1911

The All-Technology Reunion featuring the inauguration of Dr. Compton, was a great success and '11 was well represented at the various functions. We had 27 at the stag dinner at the University Club on June 6, while the ladies were being entertained by the Technology Women's Association at the Statler. As we came out of the Class Dinner to join the ladies at the Statler, we were just in time to see the wonderful fireworks displayed in front of Technology and the effect of the special lights which flooded the buildings was certainly beautiful.

There were 17 of us at the outing at Swampscott, and there were 19 of us present at the final banquet at the Statler, with Dennie back in his accustomed rôle of cheer and song leader. Here is the list of the '11 delegation present at one or more of the affairs: John Alter, Bog Bogdasarian, Obie Clark, Art Coupal, George Cumings, Dennie (friend wife staying at Douglas Hill keeping tabs on the workmen getting the place all in readiness for our mid-June opening), Mr. and Mrs. Cal Eldred, Ken Faunce, Joe Fuller, Ned Hall, Tommie Haines, F. C. Harrington (who, coming all the way from Cheyenne, Wyo., got the cake for coming the longest distance), Mr. and Mrs. Joe Harrington, Mr. and Mrs. Stan Hartshorn, Mr. and Mrs. Jack Herlihy, Hal Jenks, Mr. and Mrs. C. R. Johnson, Tom Killion, Mr. and Mrs. Roger Loud, Fat Merrill, Mr. and Mrs. Carl Richmond, Don Stevens, Mr. and Mrs. O. W. Stewart, Mr. and Mrs. Ted Parker and son, Paul Pearson, Ed Vose, Mr. and Mrs. Walter Welch and daughter, Mr. and Mrs. Emmons Whitcomb, Pete White, and Walter Wilson.

Ted Van Tassel sent a telegram from New York City to the Class Dinner Friday evening regretting his being unavoidably detained in the big city. Among those from a distance who sent word by mail that they couldn't attend this year but were certainly planning on being here for the Twentieth Reunion in 1931 were: Norman DeForest, Palm Beach; Norman Duffett, Niagara Falls; Pop Hufsmith, Palestine, Tex.; Jack

McAllen, Seattle; Henry Van Hovenberg, Texarkana, Tex.; and Alex Yereance, Washington. Speaking of next year's party, where would you like to have it? Think it over and then write to Dennie.

It was great to see F. C. Harrington back East and he may locate here, after having been in Wyoming since graduation. On his reply card he said he hoped your Secretary would clean up his hotel in Maine, adding that it was in Maine that Mary Baker Eddy got her start. — From reply cards sent in for the Reunion we got some interesting bits. Sam Blum is now managing and playing in Billy Dooley's orchestra at the Westminster Hotel in Boston. — Allston Cushing is in Kansas City where he bought a new home last March and now has a new car. — Roy MacPherson is on another business trip to Europe. — Hal Robinson has recently been appointed a member of the Worcester City Planning Board by Mayor O'Hara. — Roy Seaton and his wife spent the summer in Europe leaving July 2 and returning September 2. He is just completing his tenth year as Dean of the Division of Engineering at the Kansas State College in Manhattan, Kan. — Jack Urquhart is now in command of the eastern division of the International Shoe Company, writes Ted Van Tassel, and Ralph Bierer and Howard Ireland, both at Auburn, N. Y., are making all those Enna Jettick shoes. — Bunnie Wilson reports a third daughter born last December.

Bob Morse, VI, is still hanging on and on and reports the birth of a new daughter, Margaret, on June 14. — Frank Osborn, II, who is now back with the Andes Copper Company at Poterillos, Chile, wrote in June wishing me best luck in my new hotel venture and adding: "Our winter is just starting, but we have had a most wonderful summer."

This first season at Douglas Inn has been very pleasing to Mrs. Denison and myself, and despite the business depression, we have had more guests than we anticipated. One sad touch is the fact that '11 men haven't learned their way up here, for Erv Young, I, and his wife, and Ted Van Tassel, X, with his wife and daughter, Nancy, are the only '11 men at this late August writing who have visited us. You must come over! We'll be open into October.

A questionnaire will soon be issued that we may decide on the time and place of the Twentieth Reunion, destined to be bigger and better than its predecessors. When better Reunions are made, '11 will make them! — ORVILLE B. DENISON, *Secretary*, 32 Reed Street, Lexington, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

A mimeographed bulletin was mailed to every member of the Class last July, telling briefly the story of the Reunion in Cambridge and giving the names of the 21 classmates who gathered at our own private party at Brae Burn. If you did not get one, it is probably because your

1912 Continued

correct address is not on file in the Alumni Office. Write now and we will send you a copy. Our offer of a free copy of the snapshot of the Class at Swampscott produced a few takers, but not as many as we expected. The boys must be afraid there's a catch in this free business. Honest, there ain't no catch!

Letters have been received this summer from Jim Cook, VI, William Glidden, I, William Hammerstrom, II, Erwin Schell, II, all expressing their regrets at having missed the Reunion in June, but pledging support for the rapidly approaching Twentieth Reunion in 1932. Twenty years since that day in June, 1912! It won't be long now! Your Assistant Secretary got himself elected chairman of the Reunion Committee so it will be his duty and pleasure to pester you in ever-increasing volume from now on about this Reunion business.

Not many of us can boast of having made as prompt and efficient use of our eighteen years as Page Golsan, VI. He can boast a son entering M. I. T. this fall. How's that? We want to produce his letter verbatim because it's worth printing. Honestly, Brothers, we would much rather reproduce your letters than make up all the hokum you usually get in this column. But what can we do if we don't get the letters?

Golsan writes: "You have asked me to write you about what I have been doing since the Fifteen-Year 1927 Reunion. At that time I had just sold the cement company at Kansas City, and I was acting as consulting engineer for the new owners. I continued my contact with the cement industry, but also undertook commitments in the utility industry. This took me to Texas for a considerable time in 1928, and in 1928 and 1929 I spent quite a bit of time in Omaha representing Ford, Bacon & Davis, Inc., and other interests in the preliminary negotiations for the natural gas pipe line now being built from Texas to Chicago. This line had first been planned to serve Omaha, but a change in the art of manufacturing pipe made the additional mileage to Chicago feasible and, of course, the larger proposition was taken on.

"This work was followed in the fall of 1929 by a market survey as to the sale of natural gas in the Chicago territory, so that by that time I had decided I was never going to get home again. In the beginning of 1930 I was asked by Ford, Bacon & Davis to come East and make a similar study of the market for natural gas in the Philadelphia and Newark territories, with the view of bringing natural gas by pipe line from the Columbia properties in West Virginia to this territory. By that time it seemed that I was spending most of my time on F., B., & D. work so I was finally transferred to their pay roll, and have since moved my family to New York City. My job is that of manager of the new business department, which means in plain English, Sales Manager. In between this jumping around on the map I managed to spend the summer of 1927 in Col-

orado and the Northwest, and the summers of 1928 and 1929 at Long Beach, Calif.

"My boy is now as tall as I am and is entering M. I. T. this fall. I venture to say he will be the first 1912 son to enter the Institute. I had the pleasure of spending a Sunday with Jack Freeman and his family recently, and have talked on the telephone to White and 'Wemp.' I also received a letter from Joe Desloge in St. Louis, who says things are going along well with him.

"I am sorry I could not get to the Reunion in Boston in June, but it was necessary for me to make a business trip West just at that date. While it has been very pleasant living in the West, still New York where things 'move' is certainly an inspiration. Give my regards to the Class."

Professor Schell and his wife made a trip to Europe in the early summer, details of which we hope to obtain for a future publication. A note from John Barry written on board the S. S. *Minnetonka* was received in June expressing his regret in not being able to attend the Reunion as he has been called abroad on very short notice. Our champion traveler, Bernard Morash, VI, is now back in the States from Japan where he has been in charge of the Export Department of the Kelvinator Corporation. Latest advice gives his address as Hurley, N. Y. Ralph Doane, IV, has recently been very much in the public eye as in the Boston *Herald* contest to determine the best architect in the four northern New England states, three of the fourteen designs from over two hundred submitted were work from Doane's board. The buildings chosen were the Boston Motor Mart, the Sharon High School, and the Hopkins Restaurant Building in Boston. No other architect had more than two buildings selected among the fourteen. Congratulations, Ralph! — FREDERICK J. SHEPARD, JR., Secretary, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, Assistant Secretary, McGraw-Hill Publishing Co., 10th Avenue and 36th Street, New York City.

1914

The one outstanding event since the preparation of our last notes was the All-Technology Reunion. Following the inaugural formalities came our own Class Dinner. To some of '14 it was their outstanding Reunion event. We met at the Engineers Club in Boston, dined on one of Harry's well prepared meals, then fell into a bit of retrospect, which the inimitable Dean Fales greatly assisted by enlarging upon, whenever the occasion required. It is safe to say that we all enjoyed the party and were equally proud of a complete absence of casualties. We had with us as our distinguished guests three famous Technology aviators, Hegenberger, Brown, and Aldrin. Our table was further graced with the presence of our duly initiated honorary member, William Jackson.

The next day some of us balanced luncheon plates down the steep stairs of the picnic improvised lunch room, while others saved their physique for the endurance contest at the evening banquet. A few hardy ones withstood all Reunion events. On the roster of the visiting firemen, we find Frank Somerby of New York City; Jimmy Judge of Holyoke; Walter Hauser of New York City; Leigh Hall of Concord, N. H.; Ralph Perry, Art Peaslee, and Roy Parsell from the wilds of Connecticut; Karl Mason of Brockton, Mass.; Donald Dixon of Monument Beach, Mass.; Jim Reber from Auburn, N. Y.; and last but not least — except in size — Freddy Karns from way off in Franklin, Pa. The reception committee of local '14 men who were on hand included Chase, Charm, Dickinson, Horton, H. S. Wilkins, Price, Crocker, Corney, Eberhard, Dunn, Ambler, Swift, Favorite, Joe Currier, Gazarian, Fales, McCellan, Atwood, Stump, and Richmond.

We missed Malc MacKenzie who had to change his plans at the last minute because of a cross country trip with a visit to Yellowstone Park. — Charlie Fiske telephoned from New York that his "head was clear as a bell — same as any other night" — but after the last party he could not get away again without a court order. — Buck Dorrance must own Western Union stock instead of American Tel. and Tel. Co., because he telegraphed his regrets. Since the Interstate Commerce Commission got fussy on passes, Buck has to stay on the Pennsylvania System. What a cheer Porter Adams received when he telephoned in from Thetford, Vt., where he is continuing his recuperation!

Lester Forbes missed our dinner, but he listened in to the broadcast stunt at the big dinner from Paris, where he was on a mission for the Submarine Signal Company. Forbes wrote as follows: "Upon my return to my hotel about midnight, June 7, I happened to listen in on my short wave set in time to hear preparations being made for some sort of a stunt broadcast. This later proved to be in connection with the Reunion Banquet, and I had the pleasure of hearing greetings passed between the Technology man on the *Leviathan*, Captain Brooks flying in an airplane, and the banquet room, followed by a cheer for good old Technology. It was quite a coincidence that I happened to stumble on to this broadcast."

H. J. Danforth has left the New York office of the American Tel. and Tel. Co. and is now in Buenos Aires with the International Telephone and Telegraph Company. Phil Currier, who was in Buenos Aires, has returned to the Schenectady plant of the General Electric Company. — E. C. Wente, who has become prominent in sound studies, has been granted a patent on one of his loud speaker developments. It was officially recorded as an electro-dynamic device. — When Admiral Byrd returned to Boston in July from his Antarctic expedition, he received a tremendous ovation. The

1914 Continued

two principal hosts to Admiral Byrd in the city's celebration were Mayor Curley and our own Porter Adams. In his address Admiral Byrd, turning to Adams, said, "He has done more for aviation than any other man in the United States." Pat, Admiral Byrd is no more proud of being a friend of yours than are your classmates. — HAROLD B. RICHMOND, *Secretary*, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, N. Y.

1915

Hang over, my classmates, and you shall hear of our famous Fifteenth Reunion. Final plans were arranged at a pre-reunion dinner at the University Club, Boston, on May 29. Those present were: Fred Waters, II, Art Nelson, VI, Chet Runels, IV, Weare Howlett, X, Pirate Rooney, I, Mitch Kaufman, X, Frank Scully, I, Max Woythaler, V, Jay Sindler, X, Archie Morrison, II, Laurie Geer, VII, Larry Landers, X, and myself. The committees assigned were: Frank Scully, generalissimo; Archie Morrison and Mitch Kaufman, golf; Rooney, baseball; Fred Waters, police influence in Marblehead; Woythaler, prizes; Laurie Geer, anything needed at the Institute, and last but very important, Gabe Hilton, Canadian liquid refreshments. From the way everything clicked at this dinner you just knew the Reunion had to be a success. And so it was! The bowling afterwards was exciting and funny. This bowling will henceforth be a regular part of the Boston dinners as will also be the enlivening influence furnished at dinner. And so to the great day.

We gathered at our headquarters at the Institute on Friday, June 6, to renew old acquaintances. Frank Scully kidnapped Ike Litchfield '85 and brought him along. What's that old line about a lot of mileage left in an old tire? Ike surely needs no service adjustment, for he was the life of the party Friday night. Gabe arrived from Detroit with an Ajax carrying his huge bag of supplies. The opening dinner Friday evening at the Corinthian Yacht Club, Marblehead, was more than I can describe. One event, unheralded and unexpected, but surely a prize winner, was the story telling of all kinds, in which Ike Litchfield, Eddie Fonseca, Wilbur Swain, and St. Elmo Piza excelled. Competing for honors in hilarity were Bill McEwen's songs, especially the solicitous attitude of those farm animals. Bill is a great songster and, in fact, won the music prize on Sunday.

During the height of the after dinner revelry, the puzzling problem of how best to empty a brimming bowl of Meduna punch was quickly and easily solved by '17, whose adjoining dinner was dragging a bit, crashing our party. With them came some '18 men and the next day some '12 men, so instead of sending classes a small charge for entertainment we are going to show them how to run a successful reunion. Seriously, we welcomed their congenial and

jolly company, for '17 is a great class. But we all wondered what would have happened if any '16 men had appeared. They seem to have been floundering lately, so what a ride they would have had between us and what a lot they could have learned from two such classes as '17 and '15. The punch was bowl dry, our locker empty, the crap game subdued — and so to bed.

After a hearty breakfast of black coffee and bromo-seltzers, Saturday opened with our out-of-door sports. Archie and Mitch took the boys to a nearby club for golf. From the evening before, you would think it might have been a tight match, but it was as one-sided as a postage stamp. Some of the fellows, names withheld, took some of the other boys handsomely. Meanwhile, the real athletes of the Class were crossing bats with '17 in an old world ball game. When their captain finally threw in the towel the score was 18 to 3, more or less in our favor. Defensively, the game looked like football with twelve or fifteen men on a side, each fielder having an assistant. Offensively, it made you think of cricket, for home runs on our side were as common as bald heads in the front row. Our battery of Frank Parsons, pitching, and Pop Wood, catching, was invincible, so the score for '17 could have been like the last line of that well-known verse "no hits, no runs, no errors." Aching arms and limping legs will testify that the three or four innings we had were enough.

A number of the fellows then went up to the General Reunion at Swampscott and on to the Alumni dinner in Boston. The rest settled to a quiet evening of bridge and poker, enlivened and entertained by a small fire under the front porch of the Yacht Club. This was quickly extinguished in true engineering style. Saturday afternoon, Bob Mitchell took a boat load of us out for a sail. Bob is a regular sailor, including the customary yarns and profanity, and he gave us a great treat. We found out that his command "lay on that sheet" did not mean recline on a bed.

Sunday was our only tough break. A heavy fog and rain prevented the speed boat rides we had planned, so we had a restful day. Pictures on the lawn at noon prefaced an excellent lobster dinner. Our farewell was climaxed by Gabe, as toastmaster, awarding the reunion prizes. No doubt a number of wives read these notes, so, upon request, we shall be glad to furnish you a description of the prizes and their recipients. These burlesque prizes with Gabe's appropriate wise cracks gave us a lot of laughs. We broke up Sunday afternoon, happy I am sure from this splendid association with our good old friends. The success of this reunion brought forth suggestions and plans for our twentieth. Some of the fellows have already written in their reactions from our party.

You know, the Reunion furnishes material for only one issue, so how about writing me your feelings after the Reunion? This to our credit — there were

no complaints of our actions or conduct from the Yacht Club officials and no criticisms or renegeing on the part of any of the fellows attending. Those present were: Harvey Daniels, I, Yokohama, Japan; Guernsey Palmer, II, Houston, Texas; Norman Doane, V, Indianapolis; Gabe Hilton, III, Detroit; Maurice Brandt, V, Trenton, N. J.; Bill McEwen, II, Wellsville, N. Y.; Louie Zepfler, V, Elizabeth, N. J.; Kebe Toabe, V, Elizabeth, N. J.; Bob Mitchell, X, Westfield, N. J.; Al Hall, II, Berlin, N. H.; Doug McMurtrie, X, Berlin, N. H.; Donald Hooper, II, Portland, Me.; Chet Runels, IV, Lowell, Mass.; Newell Foster, X, Lowell, Mass.; John Dalton, X, Lawrence, Mass.; Loring Hayward, I, Taunton, Mass.; Vincent Maconi, I, New Haven. The following came from metropolitan New York: Eddie Fonseca, I, St. Elmo Piza, IV, Wilbur Swain, VI, Chris Wolfe, I, Andy Anderson, I, and the following represent the Boston contingent: Arthur Baldry, IV, Frank Scully, I, Wally Pike, I, George Rooney, I, Henry Shiels, I, Carl Wood, I, Harry Murphy, I, Archie Morrison, II, Fred Waters, II, Louie Young, II, Frank Parsons, II, Herb Swift, II, Ed Sullivan, II, Harold Colby, II, Ed Whiting, II, Marshall Dalton, II, Whit Brown, IV, Max Woythaler, V, Abe Hamburg, V, Arthur Nelson, VI, Horatio Lamson, VIII, Mitch Kaufman, X, Weare Howlett, X, Jay Sindler, X, Larry Landers, X, Azel Mack, X, Easy Weaver, XIV. This makes a total of 49 men who attended at some time or other and compares very favorably with the 62 who came to Cotuit in 1925 for our Tenth Reunion. While Howard Thomas was Class Secretary Mrs. Thomas took an active part in helping him. She still retains an interest in Class affairs, so she and her young daughter, Barbara, were our guests at Swampscott. She wrote us a very expressive letter of appreciation. John O'Brien, conspicuous at Cotuit, was all signed up to come, but was recently made general manager at the Boston Garden. The duties of his new position prevented his being with us. Congratulations, Johnnie!

I am sorry to report the sudden death of Weare Howlett's eight-year-old-son, Bobby. He passed away in June, the result of a tonsil operation. Our Class sent flowers and a note of sympathy, for I know we all feel deeply for Weare and Mrs. Howlett in their sad loss.

On June 25 Loring Hayward wrote from Taunton: "Enclosed is a loose paper clipping which will be of interest to you. Some of our classmates are truly famous when they appear in the newspaper caricatures. I imagine that Chet obtained his experience at the expense of bringing water at the Corinthian Yacht Club Reunion. Of course I mean bringing water to put out the fire." The cartoon shows Chet as Secretary of the Lowell Chamber of Commerce demonstrating the good qualities of Lowell's water. He was very much in evidence at all times at Marblehead. Congratulations on your new job, Chet!

1915 Continued

Abe Hamburg, V, of the The Superior Engraving Co., Boston, has donated to the Class the gift of some good looking engraved stationery with the necessary dies. Want to see the letterhead? Just write me a letter about yourself and I'll hurry you an answer. It has been impossible to single out individuals at the Reunion for personal mention, but I want you all to know, whether you were there or not, and we missed all the boys who could not come, that the success of our Fifteenth Reunion shows we have a loyal, devoted, and active Class with plenty of spirit and staunchness in its friendships. Frank joins me in telling you all that we are very happy about it.

What do you suppose the lion slipped on? — AZEL W. MACK, *Secretary*, 377 Marlboro Street, Boston, Mass.

1916

I am sorry that more of the Class could not arrange to get back to our pre-Fifteenth Reunion. Ralph Fletcher kindly offered us the facilities of the Vesper Country Club at Lowell, and those who were able to get there had a great time. In the afternoon Ralph, Nat Warshaw, Harold Gray and your Secretary had a lively foursome of golf. Everything went fine until the fifteenth hole over the river, where I drove eight balls, one after the other, into the water (there is nothing like being in the golf ball business at such embarrassing moments). In the evening we had a real old-fashioned get-together dinner down in the dungeon — good eats, good drinks, and good stories. The following were present: Charley Lawrance, Nat Warshaw, Bob Wilson, Steve Whitney, Walt Binger, Clint Carpenter, Dick Hunneman, Theron Curtis, Harold Gray, Barnett Gordon, and Hen Shepard. At 2:30 A.M. the party adjourned to Lake Winnepesaukee where they spent Saturday and Sunday on Harold Whitney's boat.

Various members of the Class who had been unable to take in the dinner Friday evening at Vesper were present at the general Reunion on Saturday at Swampscott. Ed Barry and Mrs. Barry, Joe Barker and Mrs. Barker, Melville Rood and Mrs. Rood, Howard Green, Maurice Holland, Santa Claussen, Tom Golden, Steve Berke, and Isidor Richmond. You have, of course, read all about the general festivities, so I won't take any more space here.

Ray Stowell sent out a most attractive card announcing the birth of his third daughter, Anne Howland, on May 25, 1930. — Announcement was received of the marriage of Miss Elizabeth Myers to Captain Ralph Millis, at Atlanta, Ga., on Saturday, June 28. Ralph and his wife are now at home on 1830 K Street, N.W., Washington, D. C. — Fred Haggkvist died at the Naval Hospital, San Diego, Calif., on June 9, 1930. Fred served in the Naval Reserve Flying Corps during the war, and continued in the service until his death.

Chuck Loomis reports no news from the Detroit section. Apparently they are all so discouraged around there about

general business conditions that they can't afford postage to their Secretary. Chuck wonders how much Moose Jewett is spending on newspaper publicity, for he recently ran across a two-column write-up in the Buffalo *Courier* on Moose's activities. It sounds as though Moose contemplates running for U. S. Senator this fall. Briefly, Moose is now Vice-President and operating superintendent of Larkin Company, Inc., at Buffalo. He is also Vice-President of the Buffalo Pottery Company and director of Larkin Company of America, Larkin Company of Illinois and Larkin Company of Pennsylvania. His family is composed of a wife and three children, the oldest being ten years old. In addition to the foregoing activities, Moose is also a director of the Kent-Costikyam Company of New York City, technical advisor on the board of the Associated Industries of New York State, a trustee of the Elmwood School, and a deacon of the Westminster Presbyterian Church. In his leisure his specialties are golf and horseback riding.

Here is a good letter from Ed Weissbach: "This is just to let you know that I have severed my Cincinnati connection with the Richardson Paper Company and am now located in Camden, N. J., with the Campbell Soup Company. Incidentally this is the finest organization I have ever worked for. My home is at Alexander Avenue, Merchantville, N. J. I had the surprise of my life the other day. I was going out one of the revolving doors of our local best hotel when I saw a '15 man, whom many of us will remember, coming in. It was M. F. Brandt. Brandt was a lieutenant in my military drill company back in our freshman days at Technology. He is now connected with the Vacuum Oil Company at Paulsboro, N. J., and lives in Trenton which is only forty miles away and he drives to work every day. The record is so good that I wonder if any in our Class can equal it. I am looking forward to getting acquainted with the Class members in the Philadelphia section." — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, 7338 Woodward Avenue, Detroit, Mich.

1917

And now '17 has an author of a prize novel. Irving Fineman is the winner of the \$7500 prize in the Longmans, Green and Company first novel contest. A thousand manuscripts were submitted. Fineman's "This Pure Young Man" is a study of the conflict of sensitive youth with the modern world. We must read it and confirm a suspicion that the hero was not a classmate; there were no qualified candidates for the honor at the recent Reunion.

Anyone who expects an adequate description of the '17 section of the Reunion in these notes is doomed to disappointment. The only man present capable of such description must refrain for personal reasons. By invitation, the major group joined for a time with '15 with whom we shared the Corinthian

Yacht Club. Another group, also by invitation, brightened the '14 meeting at the Engineers Club.

The Stanning distance club went to Ras Senter who came on from Texas and added much to the pleasure of the whole affair. He spent several days in the East, renewing a few of his many old acquaintances. The dinner, with its usual and unusual toastmaster, the Quaker politician, Mr. Dudley Edwards Bell, went off with several bangs. The after dinner speeches were informative, elevating, inspiring, numerous, and short. Leon MacGrady distributed the many prizes; to Monty Lovejoy, first prize; to Ken Bell, for the most Rabelaisian; to Louis Wyman for the most effective presentation. On the following morning nine men watched '15 play ball. It was supposed to be a contest, but the score was unavailable — at least from any '17 man. The Eddy-McGrady coalition had not worked together for a sufficient time. The All-Technology events had, as usual, an adequate '17 representation, and at the final dinner, they outnumbered all but a few classes.

Alan Sullivan could not get to the Reunion but dropped in during the latter part of August to apologize. — J. Raymond Ramsey is now living in Mechanicville, N. Y. — Hank (alias Raymond Freeman) Goudey has recently become research engineer in the Department of Water, Los Angeles. As you doubtless know, about half of Los Angeles' water supply comes from the mountains, and the other half from ground water. It is understood that Hank's activities are directed toward finding means of getting Los Angeles' sewage back into the ground water so that it can be used over again for the water supply. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

The fall migration has begun, but the 1918 variety seems to be northward for the winter. News of Peter Strang's leaving Washington, D. C., for an Auburn-dale, Mass., address as well as James McClellan's trek from Pennsylvania to Littleton, Mass., has reached us by the grapevine telegraph, though details are missing.

Descript Merrill announced to a waiting world the birth of a son and heir sometime about the 26th or 27th of last April, and as we were in Hartford one day recently we went to see the family. To begin with, we think that Descript had his biblical nomenclature somewhat tangled when he named the baby David. The rascal weighed eleven pounds when he was born! David refused to be interviewed as to his interest in engineering, but he did demonstrate a certain ability to "tell the world." A few moments in the Merrill attic give one the impression of the Krupp works, or Schenectady, on a Monday morning. Lathes, boring mills, drill presses, and oodles of old sea chests all filled with precision tools are everywhere. These were traces of tools inherited from a blacksmith grandfather,

1918 Continued

a mason uncle, a plumber neighbor, and a glass blowing third cousin. No wonder Descript turned out to be a mechanical engineer. Just to make the picture of his activities complete, he came up to my camp for the week-end, made a toy sail boat for my 1922 model out of various scraps including a cast iron keel adapted from the door of a discarded wood stove, and then penned me from his "think tank" as follows: "I worked out my own answer to the question I put to you regarding the shape of the curve of areas for ships. With a slide rule, second hand planimeter, and some curiosity I applied an analysis of my own to the miscellaneous collection of ship lines I have. Once started, there were enough surprises to keep me going. The result was the turning of the sweet lines of a clipper ship inside out into what corresponds well with a Roger Babson business cycle. . . ."

Let the members of the Class who have degenerated into being bloated bond salesmen read that again and consider how far they have fallen.

Another interesting communique came half way around the world from George Sackett who is with the Goodyear Rubber Plantations in Dolok Merangir, Sumatra. He writes: "I have often thought of writing a letter to tell you that I am still out here in the jungles of Sumatra, and expect to be for about two years more doing development work in connection with crude rubber manufacture. This plantation, Dolok Merangir, comprises about 16,000 acres, and is nearly all in bearing. We are opening a new plantation further south, which will be about 35,000 acres. This will not be in bearing until 1934. In the meantime, there is plenty to study with regard to the best and most economical method of making rubber from latex. I have charge of chemical research and all factory engineering in addition to the experimental work in connection with the development of new processes. It is a big proposition as there has been practically nothing of importance done along those lines since the plantation industry started, with the exception of the 'sprayed latex' process put out by the United States Rubber Company.

"Mrs. Sackett and I were both sorry to have missed the big Reunion, but possibly will go to the next one. We just couldn't get there and back this year in our usual vacation period. We are planning a regular American Fourth of July celebration out here, with a baseball game, dinner, and dance. I have been elected Chairman of the American Association and have my hands full making arrangements. We expect to have a hundred people, which is quite a crowd for this country.

"Sumatra, although little known, is far from being one vast jungle. The land is being rapidly cleared and planted. It is growing rapidly and due to the fact that the developments are rather recent, its efficiency will place it in the lead in a few years. We seldom see any of the real wild animal life, although we have twice seen a tiger ahead of us in the road while

we were riding along in our car. Monkeys of course are common, and snakes are by no means rare. [and to think that some of our wives want to yell "Police" at the sight of a cow!]. Living conditions are quite good. We have a brick-stucco bungalow, with electric lights and running water. American tinned fruits and vegetables are common, as well as native varieties of fresh fruits and vegetables. The climate is not disagreeable but it does seem strange to have summer all the time. Best regards to all." — F. ALEXANDER MAGOUN, *Secretary*, Room 5-328, M. I. T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, 51 Houston Avenue, Milton, Mass.

1919

The Class of 1919 was very well represented amongst the 2,000 Technology Alumni who took part in the inauguration of President Compton and the All-Technology Reunion exercises which followed. On Friday evening, June 6, after the inauguration, 24 men of the Class of '19 had dinner together at the Hotel Brunswick. We were indebted to Bill Banks for arranging the dinner and we all agreed that he did a splendid job. Bill provided a seat of honor for our President, Don Way, and our dinner was slightly delayed owing to Don's late arrival. He made no explanation of his tardiness, but perhaps he is seeking to build up a reputation like a famous mayor of his home town. The dinner, once under way, was very informal and provided ample opportunity for conversation. A very live topic was our Class Reunion in 1934 and while it is perhaps a little distant, it showed an interest in our reunions. Many felt that the next one should be held somewhere in the vicinity of New York and that this should be kept in mind when future arrangements are made. Among those present we were pleased to see some who were unable to attend our Ten-Year Reunion. We regret that many of you could not attend, but look over the following list and see if you do not find many of your former friends there. Bill Banks, Don Way, Art Griffin, John Kaiser, Marshall Lee, Ras Rasmussen, Max Knobel, Art Kenison, Jim Holt, Russ Palmer, Ev Doten, Rod Blood, Paul Sheeline, George Wiswall, George McCarten, Herb Best, George Michelson, Bob Hackett, I. Slotnik, Ben Bristol, Dick Holmgren, Joe Newell, Max Untersee, and Bill Langille.

Much interest was shown when some cards were read from fellows who could not come and we think you would be interested in the cards also. They follow. From Charles Parsons: "Sorry, but I can't make the Brunswick on June 6. One of these Junes I'll make Boston, but not this year. Best regards to yourself and the gang." From Ed Pierce: "Sorry I can't take in the reunion. Remember me to the bunch and hope it will be the biggest and best ever." From Frank Weiskittle: "I am very sorry that I will not be able to be at the '19 dinner at the Brunswick. I don't really mind

missing the dinner, but I hate to miss the entertainment and so sorry I will not be able to join you and the boys in singing the Class Ode 'Down on the Farm' by Griffin." From Johnny Caldwell: "Wish I could be there, Bill, to see you and some of the bunch again but regret that I can't make the grade. Best to you all and hope it is a rare reunion." From Ralph Gilbert: "Very sorry but I don't think I'll be able to make it. Just got married a short time ago and you know how it is. My best regards to you both and to Bruno, Leland, Freddie Britton, Max Untersee and all the rest that I see once in a decade." From Chuck Drew: "Mighty sorry that I can't be with you. I have a new job to care for starting June 1 so it's hard to pull out quite so soon. Please give my kindest regards to all." A telegram was received from New York. It follows also. "The New York group in the Bell Telephone Laboratories sends greetings to 1919 Class dinner at Technology Reunion 1930." The Class was well represented in the parade of the Classes and the other activities at Swampscott on Saturday. As the notes are already fairly long, we will only say that Paul Sheeline defeated a very strong team at obstacle golf and Ev Doten carried the '19 banner in the parade. Our Class occupied two tables at the banquet on Saturday evening. Several of the men were accompanied by their wives. Burbank and Stewart were both at the banquet although they had not been able to attend our Class dinner. Don Way received a postal card from Oscar de Lima who is traveling in England. — W. O. LANGILLE, *Secretary*, 44 Acme Street, Elizabeth, N. J.

1920

Reading about a Reunion which happened last June is something like reading last week's newspaper. I will simply say that we had come 60 fellows there and that we had a grand time. It was undoubtedly our most successful gathering to date. Skeets Brown was there fresh from the wilds of Mexico, Chuck Reed came on from Cleveland, and Von Byron from somewhere in Pennsylvania. Scotty Wells made the best guess as to his golf handicap and won the tournament. We received telegrams from F. B. and R. L. Turner, Tony Anable, L. D. Wilson, and Lauren Hitchcock, who wired from the University of Virginia that a family of four future co-eds prevented his presence. We also heard from Harold Kepner who told us he was leaving Rensselaer to go to Utah Agricultural College, and from Bill Meissner, IV, who is a practicing architect in Newark, N. J.

At least three good brothers have deserted the fast dwindling ranks of the bachelors since the last issue of The Review. One is Karl Bean, who was married to Miss Agnes MacDonald at Trinity Church in Boston, August 30. Another is Mike Houghton, who has been teaching at the Institute and has now gone out to the University of Colorado to take charge of a department there. He was married in June to Miss Frances Pulliam of Denver.

1920 Continued

The third is Grant French, who was married last spring to Miss Elizabeth Gaffey at Zanesville, Ohio. Grant is a civil engineer and is living in Chicago. To these and to any others who have escaped our notice the Class offers its heartiest congratulations. Correspondence from classmates has dwindled to the vanishing point. Your Secretary once more earnestly bespeaks your cooperation. — HAROLD BUGBEE, *Secretary*, 9 Chandler Road, West Medford, Mass.

1922

During the summer months there has been little news of the members of '22. No letters have been received and, with the exception of a call from Bob Thulman when, unfortunately, the writer was away from New York, no visitors. Sorry not to have seen you, Bob.

However the results of Cupid's work are in evidence. Eric Hodgins, who was married to Miss Catherine C. Carlson on Saturday, July 5, is now at home at 405 East 54th Street, New York City. — From Austria an announcement is received of the marriage of Miss Charlis Hugh Fishback to Frank Vogel in Vienna, on August 17. — On June 28, Miss Janet Sheldon of Rockford, Ill., became the wife of Orhneil Williams of Winsted, Conn. They will make their home in Farmington, Conn. — Miss Gretchen Froehlich was married to George Cutter on June 30 in Toledo, Ohio. — In July Miss Leigh Kendall of Whitinsville, Mass., was married to James Truslow, who is associated with the Whitin Machine Works in Whitinsville. — On Saturday, June 7, the wedding of Miss Ruth Underhill and Edward F. Bowditch took place at Audubon Circle, Brookline, Mass. — Miss Frances Wahlgren married George Potter of Hewes and Potter, in Melrose. They will live at 20 Rockland Street, Melrose Highlands, Mass.

Dr. Stork has been busy, for we hear that Lieutenant Elmer L. Johansen and his wife report the birth of Elmer L. Johansen, Jr., on June 28, weight, eight pounds. Johansen is a flying instructor at the Great Lakes Naval Station. — Write and tell us what you are doing, or better still, drop in when you are in New York City. — RAYMOND C. RUNDLETT, *Secretary*, The Curtis Publishing Company, Inc., 60 East 42d Street, New York, N. Y.

1923

Bob Hendrie announced his resignation as Secretary, you will remember in the last issue. Having carried the load of the job for seven years, with aid at rare intervals by his alleged assistant, he is justified in stepping out, but we all recognize and appreciate the value of his efforts in keeping up some semblance of contact between the members of the Class during the hectic years following graduation when we have all been scrambling to get a start somewhere. The Reunion brought a few of the fellows back to the Institute this year. 36 showed up on the evening of June 6 at the informal Class dinner held at the Woodland Golf

Club at Auburndale, Mass. This gave us a chance to check up on the recent activities of some of those who were there. Doc Smith presided in the absence of Bob Shaw. Entertainment provided included an "Amos 'n' Andy" skit by Ed Schmitz and Lem Tremaine, anecdotes of a sort by Jack Cochrane, and Ed Schmitz singing, "At the Sign of the Three Brass Balls" . . . at least those are the items which I recall most vividly. Everybody present was called upon to say something and account for himself, which each did. Some were so bashful that they gave the barest outline of what they were doing. Some of the reports which were given follow.

Jim Robbins is teaching at Newark Tech. — Miles Pennybacker is with the Neon Co. in Boston, promoting the use of this new type of electric sign. — Jack Cockrane's headquarters are in Cincinnati, manufacturing laminated bakelite. — R. T. Colburn is in the Hydraulic Division of Stone & Webster. — Dave Skinner is with G. E., manufacturing meters and other instruments. — Donald Gardner is at Lynn with the Champion Lamp Works. — Lem Tremaine is in New York City, selling life insurance. — Frank Dillon is doing research for the G. E. — Ed Fox is with the Oil Burner Service Co. of Boston. — David Kaufman is also selling oil burners among other things. — Ray Brink is with the New Departure Ball Bearing Co. — Frank Hobson has a going business in power piping and allied lines in Lowell, Mass.

Al Redway is helping to manufacture rubber and sugar machinery. — William Barrett is practising law in Lowell. — Bill Blandy is with the telephone company in Boston. — Roger Cutting said he was handling rubber goods. — George Rowen is still with the Sullivan Machinery Co. — J. H. Zimmerman and Sherwood Brown are both at the Institute on the instructing staff. Others present at the dinner not mentioned above were: Ernest Greenough, Stan Davidson, Bob Hull, Ben Bullman, Roy Wagner, W. Walton Johnson, H. L. Bond, W. F. Potter, W. T. Howland, Clarence Chaisson, Bob Hendrie, Bert McKittrick, Archie Williams, B. E. Proctor and Fred Almquist. Course XV was most heavily represented and Course II next with eight and seven respectively. Course XIV turned out in a body — all four of them. (I don't believe that one in a dozen of you can say offhand what Course XIV is, as I write this I haven't the slightest idea, but I'm going to look it up right now: It's Electrochemistry. Maybe I'll remember it next time.)

Thanks to the clipping services maintained by the Institute the Class Secretaries are notified of happenings of importance which should be set down in these columns but which would otherwise not be available until some of our close-mouthed brothers in the bonds took a notion to advise the class scribes. Most of the notes immediately following are from those sources. An exception is the information thoughtfully sent in by Norman Weiss that a son, Norman

David Weiss, arrived on May 30. Norman and Mrs. Weiss live at Santa Barbara, Chihuahua, Mexico.

A clipping from Wayland, Mass., tells of the wedding of Thomas Drew to Miss Alice Watts of Philadelphia, scheduled to take place in that city on June 9. Another clipping tells of the engagement of Stephen Webber, a former member of Course VI, to Miss Judith Hemenway Bibbs of Portland, Me. The marriage of Louis Skidmore is reported as of June 14. The lucky girl is Miss Eloise Owings of New York City. After leaving the Institute Skidmore went to Hammond, Ind., where he established himself as an architect. After several years there he went to Paris to study, remaining there three years, during which time he met Miss Owings. Last January he returned to Hammond resuming his business connections there. Aside from his local work, he is chief designer for the Chicago World Fair Commission. He and his wife will live in Hammond. Another architect has gone and got married, Ernest Gelotte. A clipping from a Quincy, Mass., paper informs us that on June 14 he married Miss Vera M. Ljunbeg of Stockholm, Sweden, at Quincy. Gelotte has been teaching at the Institute and also working for Little and Russell, Architectural Engineers of Boston. Shortly after the ceremony the couple took a short trip to Bar Harbor, Maine, returning to go on to New York from which they sailed on the *J.S. Drottningholm* for Gothenburg, Sweden. They took their auto with them for a projected tour of Scandinavia this summer. Their trip scheduled them to get back some time in September when they will be at their new home, 65 Alton Road, Quincy. In a recent letter from Leo S. Hayes who is now at the silver-lead-zinc mine of the Compania Minera Aguilar at Tres Cruces — F. C. C. N. A. — Prov. de Jujuy, Argentina, he writes as follows: "After a rather eventful trip in some ways I arrived at the mine about two weeks ago. We came down the West Coast so I was able to look up some of my old friends in Peru — although we did not stop at Salaverry and consequently I missed seeing many of the Northern Peru crowd. There was a very congenial crowd on the ship and I had a fine vacation of it. The trip over the mountains from Antofagasta was interesting but not up to the standards of the U. S. railroads. Some day they are going to realize just how cold it is on the trains and then maybe there will be some attempt to heat the cars. As it is now you just about freeze. But it does rather make you realize the importance to Bolivia of the mining industry as about every station along the road was excused only by the presence of mines nearby.

"We are out of any regular mining district here, there being no mines at all around us. I have heard it said that the National Lead was operating a small mine within 40 miles of us and if so, that is the nearest mine to us. As to be expected under these conditions everything is pretty crude at present, particularly

1923 Continued

the class of labor we have. It will be simply a question of training all our men. In the near future the job should prove to be very interesting as these various problems will have to be solved then."

Another marriage reported is that of Ed Deming to Miss Esther Mae Burnham of Belmont on June 21. Their honeymoon plans included a trip to the Canadian Northwest from which they plan to return in August to make their home in Arlington. A dispatch to the *New York Times* dated June 23 tells of the engagement of Miss Dorothy Phelps of Wethersfield, Conn., to Everett L. Sweet of Poughkeepsie, N. Y. While attending some fire tests the other day at the Everett Testing Station of the Associated Factory Mutual Fire Insurance Companies' Inspection Department, I met Ed Averell who recently joined that organization. — HORATIO L. BOND, *Acting Secretary*, 31 Concord Avenue, Cambridge, Mass.

1924

The best I have to offer this month to start the year off with is a letter from Paul Cardinal. And the biggest news by far in it is the announcement of the birth of Lorene Mary Cardinal, six pounds and 13½ ounces of "posterity," born on June 12. Paul is living at 444 East 41st Street, Paterson, N. J., and works for Hoffmann LaRoche, Inc., makers of medicines of Rare Quality, Nutley, N. J. — office hours from 8:30 to 4:45 — between which hours it is his job to welcome Technology '24 men and show them through the "ultra modern in scientific medical laboratories." And the post-script: "Am trying my best to dissuade Lorene Mary from becoming a co-ed at Technology."

Engagements always precede weddings and, because of the logical sequence of things, it will be my practice to take the engagements first. We have the announcement of the engagement of Miss Mary Herbert Gwynne of Norfolk, Va., to Joseph Porter Mountjoy of Syracuse, N. Y. The wedding was to take place during the summer. Next, the announcement of the engagement of Miss Louise Beckert of Swampscott to Albert Raymond Miller now of Chicago and Allentown, Pa., but at one time of Lynn. Mr. Miller is now with the Fuller Lehigh Electric Company in their Chicago office. Third, we have the engagement of Miss Mary Eloise Sexton to Christopher M. Conway. Miss Sexton is from Arlington and Mr. Conway, next door in Medford, except for time spent with the New England Tel. and Tel. Co. And last, the engagement of Miss Isabel Engle Dann of Sault Ste. Marie, Mich., to Donald W. Murdock, who is with Halsey Stuart Company in Boston. The order has been dictated by the date of publication.

Four weddings I also have. In the order of occurrence we have first that on June 10 when Miss Mayme Olson became Mrs. Charles Robertson McBrayne in Sioux Rapids, Iowa. Incidentally, J. Weston Pratt was best man. Mr. and Mrs. McBrayne are now living at 1401 Bluff Street, Peru, Ill. Mac is superin-

tendent of the Illinois Zinc Company mills at Peru. Miss Beatrice Himrod was married on June 21 to Dick Lassiter in Erie, Pa. No further details are known at present. Miss Dorothy Frances Ward was married on June 28 to Ed Hanley. Ed is with the General Electric Company in Schenectady. Last, we have the wedding of Miss Betty Whitaker to Frank Warren on July 7 at Stamford, Vt. They are now living at 650 East 21st Street, Brooklyn, N. Y.

There is in these notes a certain inconsistency. If you are interested in the solution of mysteries you are directed to send your answers to the undersigned. — H. G. DONOVAN, *General Secretary*, 139 Girard Avenue, Hartford, Conn.

1926

Emerson didn't relish class reunions, as he noted in his journal: "I avoid the Stygian anniversaries at Cambridge, those hurrahs among the ghosts, those yellow, bald, toothless meetings in memory of red cheeks, black hair, and departed health." The "Enraptured Yankee" was somewhat old and superannuated when he wrote that, but it is understandable that thirtieth, fortieth, and fiftieth year reunions might prove to be gloomy spectacles, apotheoses of decay. But 1926 is still young, the apotheosis of youth, as its reunion dinner last June eloquently demonstrated. With the possible exceptions of Pop Constantine, the Peter Pan of 1926, and Flint Taylor, our model of a modern metallographist, no signs of parietal depilation were discernible there; the '26 pates still supported a luxurious stand of hair. We are excepting, of course, Tubby Rogers, the class's honorary member, elected by acclamation at the dinner that night after he had delivered a sequel to his famous "Discourse on Being a Snob."

The entire affair was in no way ghostly or toothless; in fact, the youthful exuberance displayed beggars all description — so ingeniously had the evening's refreshments been contrived. The event might be fittingly called the Castoria dinner for they cried for more.

The lusty singing that prevailed throughout the evening was intermittent enough to permit occasional cheers for Harry, the steward of the Boston Engineers' Club. Once when he came in to make sure that his club was not being demolished, he was hoisted to the shoulders of several stalwarts and carried about the room.

Tubby's speech was the only one received deferentially and even he was heckled. Lee Cummings, delivering his carefully prepared peroration of welcome as Chairman of the Dinner Committee, had every word punctuated by impertinent comments from the floor, and Eben Haskell, who had prepared an erudite and eloquent plea for bigger and more frequent payments on class insurance, was reduced to telling a fairy tale.

One table even persisted in singing "Fair Harvard," an occurrence not even remotely possible in such a gathering without the duodenums of all having been previously caressed by Hippocrene

draughts. A certain amount of incoherent discussion occurred about the Five Year Reunion of the class which is scheduled for next June. The sentiment seemed to prevail that the Class should adopt a distinctive costume and that this costume should be a cane and a high hat. It was voted to leave this to the discretion of the committee, which, by acclamation, was chosen as the same committee that ran the dinner.

Those attending the dinner numbered 63 and, with one exception, it was the largest class dinner held during the All-Technology Reunion. This bodes well for our own private reunion next June. That affair should be a very elegant levée.

Two members of Course IX were married during the summer: Edward J. Bray to Miss Julia Marion Moriarty of Augusta, Kan.; and Joseph D. Bates, Jr. to Miss Jeanne Hamilton of Springfield, Mass. Bray is in the employ of the White Eagle Corporation at Casper, Wyo., and Bates is associated with the J. D. Bates Advertising Company of Springfield.

Course XIII yields another marriage — that of Wilson S. Crosby to Miss Isabelle Horan of New York. They will live in that city.

In a letter dated June 23 received by the secretary, Neil MacLaren tells of his marriage on May 29 to Miss Alvena Dunbar of Providence. He and his wife extend a hearty invitation to '26 men to visit them at their home at Long Meadow, Rhode Island. Neil is with the Brown & Sharpe Manufacturing Company. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

COURSE X

At the Class banquet in June at the Engineer's Club, Course X was well represented. Everyone had a great time, and we are hoping for a goodly number next June at the Five Year Reunion. Talk it up!

Dave Shepard holds a responsible position with the Hydro Engineering and Chemical Company, which is a subsidiary of the Standard Oil Company of New Jersey at Elizabeth, N. J. That sounds very complicated, something like the story about the house that Jack built. — Ted Mangelsdorf has been promoted to the dignity of a professor in the fuel and gas department. I believe Ted is the first of Course X to receive this intellectual distinction. — Smith Turner and his wife are to be congratulated on the birth of their son Robert Davison Turner at Baytown, Texas. — Frank Welsh is in charge of the Experimental Cracking Laboratory of the Standard Oil Company of New Jersey. — Gosta Holmer is photo-engraver for the Wright Engraving Company of Boston. — John Pew is chemical engineer for the Columbia Gas and Electric Corporation at Owens, W. Va. — Dwight Taylor has berated me for not having previously reported the arrival of his son and daughter, John Kenrick and Marion Shaw. We are happy to report this news and congratulate both Dwight and Mrs.

1926 Continued

Taylor. At the Class banquet Dwight promised to write and let us have the news hereafter. His attendance at the banquet ought to give courage to those who hover near to matrimony. Incidentally, Dwight is assistant chemist for the Pawtucket Gas Company. — Bill Dixon is assistant engineer for the Atlantic Refining Company, Philadelphia. Bill says that he is rooming with Dick Jones and is trying unsuccessfully to keep him out of mischief. Dick, who is with the same company, is keeping quiet, so that whatever it is that Bill refers to will have to remain with our imaginations. — George Cohen has strayed from chemical engineering and now owns and operates the Motor Transportation Company, Lowell. — Donald Green has left the Atmospheric Nitrogen Corporation and is now assistant chemical engineer for the Solvay Process Company in Syracuse, N. Y. — Bruce Humphreville is now with Merck and Company in Technical Sales in New York City. Bill Criswell was with the same company temporarily. — Richard Staples is transmission tester for the New England Tel. and Tel. Company and begs to be counted among those who have not embarked. — The United States Aluminum Company has a competent metallurgist in our Ralph Smith. — Wesley Hemeon was among those present at the Class banquet. Wes is now superintendent of the Hoosac Valley Lime Company, Adams, Mass. — John Buss has gone north and is with the Provincial Paper, Ltd., Toronto, Canada. — Roland and Mrs. Stowers are to be congratulated on the birth of their second child, Jean Ellens. Roland is still with the Commercial Solvents Corporation at Terre Haute, Ind., in their Semi-Commercial Research Division. — Doc Vorster sent his regrets in not being able to be at the Class banquet. Doc is assistant director of the Chemische Fabrik Kalk, in Cologne, Germany. — Jud Biehle is returning this summer from Turkey. Jud has been teaching physics there at Robert College. — Abe White is still with the Research Laboratory of Applied Chemistry and is divisional director in the High Pressure Laboratory. — Our congratulations are extended to Charles and Mrs. Shewell on the arrival of their daughter, Billie Margaret. Charles is director of Laboratory Cracking Research for the Humble Oil and Refining Company at Baytown, Texas. — Arthur Hewlett is clerk for Spencer Trask and Company, New York City. — Fritz Abbott is in Baltimore with the Silica Gel Corporation. — Ed Oeffinger is with the duPont Company, Philadelphia, as chemist. Ed said Paul Mahoney is living in the same house, but did not enlighten us as to what Paul's present social position might be. — Jim Offutt was in Cambridge this spring and honored me with a visit. Jim is Industrial Research Supervisor for the U. S. Gypsum Company in Chicago and is starting up an extensive program of industrial research for his organization. — Fran and Mrs. Jenkins received a precious parcel labeled

Jane Jenkins and we congratulate them both. Fran was in Cambridge this spring and split not less than two buttons off his vest as he spilled the glad news. Fran is assistant Vice-President in charge of manufacturing for the Kimberly Clark Corporation, Appleton, Wis. — Marc LeDuc is Research Chemist for the Great Western Electro-Chemical Company, at Antioch, Calif. — John Whitaker is Vice-President of the Anglo-Chilean Nitrate Sales Corporation, New York City. — Gus Magnus is Pacific Coast Sales Manager of the Maas and Waldstein Company, Los Angeles. — Olie Olander was at the Class banquet and has just written in to say what a whale of a success the banquet was. After leaving the paint business Olie took a pleasure trip to Europe, Sweden, Germany, Belgium, and stayed two months in Paris. He has since been assistant chemist for the Jos. Middleby, Inc., Food Products in Boston. — Hoppe Hopkins drops in to see us occasionally. The latest is that he has taken up horseback riding although it is said that he does not follow the precedent set by the Prince of Wales. — Lawson Peakes has deserted Chemical Engineering and is now studying for a doctor's degree in the Organic Chemistry Department, M. I. T. — Mac McCornack was in Cambridge a short time ago and was as exuberant as ever. Mac has spent a year in Paris studying and for the last year and a half has been studying at George Washington University in Washington preparing for examinations leading to a diplomatic or consular post. Mac is sold on the idea of living abroad and is especially interested in international economics. — Fred Broughton married Miss Mildred Smith at a fashionable afternoon wedding June 7. John Sumner was the best man. Fred and his bride spent their honeymoon at Hyannis. Mrs. Broughton was a graduate of the Perry Kindergarten School. Our congratulations are extended to Fred as well as every good wish to the couple. — From a New York newspaper comes the news that John Dykstra and Miss Margaret Stanley have become engaged. — LEE W. CUMMINGS, Secretary, 216 Upland Road, Cambridge, Mass.

1928

During the summer months a letter was received from Bill Woods, III, announcing that Bill is the proud father of a baby girl, born June 19 at Houston, Texas. Dorothea Ann is the baby's name. Since graduation Bill has been working in Oklahoma, New Mexico, Mexico, and is now with the Gulf Production Company, Houston, Texas.

Bill's letter enabled your Secretary to gather some information about Course III men, the whereabouts of whom have been much in the dark since graduation. Both Walter Nock and Harold Blackwood are working for the American Smelting and Refining Company in Mexico. John Shaw is at Cripple Creek, Colo., working on a gold mining project. Colin W. Reith is resident geologist for

the Southern Crude Oil Purchasing Company that is located at Midland, Texas. I. P. Sweeney is at Maracaibo, Venezuela, working for the Lago Petroleum Company. A. C. Abbott is with the Dupont Company at Wilmington, Del., and has just completed an extensive trip through the country on a geological survey.

Another newsy letter has recently been received from Charlie Richheimer, who has been sailing the seven seas during the past few months. The letter received by your Secretary came from New Zealand. On his way to the Far East Charlie visited Honolulu and while there, called on Dud Smith, XV, and his wife. Charlie reports that Dud and his better half are more than enjoying life in one of the most beautiful places in the world. (Charlie ought to be on the Honolulu Chamber of Commerce.) Dud is working in the Superintendent's office of the Oahu Railroad. From Honolulu Charlie sailed to the Fiji Islands and from there to Auckland, New Zealand. En route he became acquainted with some girls from California who divulged some news concerning Gordon Rogers. Gordon, it seems, is now working in San Pedro, Calif., for a construction outfit. From Auckland, Charlie plans to go to Wellington and then on to Sydney, Melbourne, Brisbane, and then on to Manila. From there Charlie does not know where his travels will take him.

The months which have passed since our last Class news in the July Review find that many more '28 men have forsaken the ranks of bachelorhood. During the latter part of July Ev Lester, II, was married. The account I received did not mention the time, place, or name of the bride, but anyhow her name is now Mrs. Everard Lester. Ev was well attended by '28 men. Harlan Paige, Ralph Carpenter, and Ernie Knight all participated in the gala event. Ev and his bride are now living in South Manchester, Conn.

On August 5 Dick Spofford, II, was married in Selma, Ala., to Dorothy Elizabeth Aycock. Tom Wood, also II and erstwhile general manager of *Technique*, was married at Kingsville, Md., on June 11 to Natalie Harper. Tom's younger brother, Charles Wood, was his best man. Tom and his wife are now living at Corning, N. Y. It seems that Course II is controlling the marriage news for our Class at the present time. Congratulations and best wishes are hereby extended to all of them. — GEORGE I. CHATFIELD, General Secretary, Room 11-203, M. I. T., Cambridge, Mass.

1929

One could start here and write pages about those members of '29 who did and those who did not attend the All-Technology Reunion last June, but somehow that seems like old news and we should be campaigning for a larger '29 representation in 1935. However, the truth is that '29 did not have many Alumni as Class standard bearers at the inauguration of our new President. Neither were we well represented at the

1929 Continued

outing the next day. The parade of all class banners showed us up pitifully at Swampscott, but not so at the banquet. We had two full tables of boys on hand to fit their appetites against the best the Statler had to offer. Let's all look ahead five years and see if more of us can attend the next Five Year Reunion.

According to the New York Times Fred Celler, XVI, sportsman and aviator, is another one of our classmates to become engaged. Miss Mary Caroline Calkins of Flushing, L. I., is the girl, and the wedding will take place in the early autumn. — Ace Vernon, X, and Miss Eleanor Edythe Brown of Denver, announced their engagement in the spring and are probably married by now, for it was supposed to be in June. — Willard F. Bartlett, VI, and Miss Ellen Louise Thorn of Evanston, Ill., are engaged. — Joe Palmer, II, and Miss Ruth Beveridge of Hartford, Conn., were announced as engaged in the spring.

The man who rose to the occasion, however, was Dave Peene, V, who, being a good architect, knew a good apartment when he saw it. His first move was to get his fiancée's approval on the selection of an apartment, and then they fulfilled their ideal by marrying on March 8. — Pop David, II, has announced his engagement to Miss Dorothy Paine. — John Foster, XV, is engaged to Miss Marion Somers of Watertown. — George White, VII, and Miss Olive L. Rogers of Quincy announced their engagement on May 5. — Harry Weare, I, has announced his engagement to Miss Eleanor Clapp. — Miss Molly Van Vranken Harding and John Osborne, XV, were married in May. — Miss Elise Marguerite Schwartz and William W. Young, Jr., XIV, were married on August 4, at Carthage, New York. I'm sure every one of us join in extending our heartiest congratulations to those of our Class who have announced their intentions and to those who made the final step. Personally, I can wish them no more happiness than I have enjoyed this last short year of married life. It is the only life, take it from me.

A voice from across the ocean protests that American life cannot compare to that of the student in Germany. Yes, it's Hunter Rouse, I. Munich is the center of the beer world and Hunter says he means beer. He, too, is hoping for a letter from Larry Hamlin. — Sam Levine is now with General Electric in Pittsfield, Mass., doing research and development work and from now on will be assistant to the Course VI A Course Secretary.

Let's have all those notes you have somehow let slip and we'll have plenty of news for next time. — EARL W. GLEN, General Secretary, 339 Hillwood Drive, Akron, Ohio.

COURSE I

Ham Williams resigned his job with the Electric Bond and Share Company in order to get an outdoor job. According to last reports he was going to work for the Pennsylvania Department of High-

ways as an inspector on road and bridge construction. — Ted Malmstrom is still out in Missouri paddling around in the mud of the Osage River. At present he is learning the gentle art of pile driving. A month ago he bought a new Ford Tudor, which I imagine is a great improvement over Betty. It is too bad that Izzy and Def can't be there to help teach it the ways of the world.

According to the new year book of the American Society of Civil Engineers, Appel, Giles, Fleming, Malmstrom, Perry, and myself are the only ones who have taken out junior memberships as yet. Perry is living in Washington, D. C., and is working for the Interstate Commerce Commission as a junior engineer. — Hallahan is reported to have been transferred from Texas to Oklahoma, but his exact location is unknown. — The last of April I started to work as a draftsman in the Boston office of Stone and Webster. At present I am working on the detail plans of the hydroelectric job on which Malmstrom is employed.

An important bit of news is the announcement of the birth of a daughter on June 11, to Mr. and Mrs. Clifford Kirtledge. Cliff is to be doubly congratulated this time with the announcement that he has been awarded a travel fellowship for the study of hydraulics in various European laboratories. Speaking of scholastic awards, it was announced at Commencement that Hunter Rouse has been awarded an additional scholarship which enables him to continue his studies in Germany for another year. — Izzy Winer has left Pittsburgh and is now in Albany doing highway work. — Harry Weare is reported to be somewhere in New Jersey working as timekeeper on a construction job. — DeFabritis is working with me in Stone and Webster's this summer. He is going to return to the Institute next fall to study for a master's degree and to continue his work as an instructor in engine lab. — Wes Walters has resigned from the Bemis Brothers Bag Company in St. Louis and is now with the United States Engineers in St. Paul.

The All-Technology Reunion events were not very well attended by '29 men. Bill Whiting and I were the only Course I representatives at the banquet. Course XI was well represented by Ed Roche and Dick Whitehead '30. Without appearing to cheat Larry Hamlin out of a chance to write a letter, I might mention that Ed Roche is going back to the Institute next year to resume his duties as research assistant in the Sanitary Engineering Department and at the same time he is going to work for his master's degree. Speaking of degrees reminds me that Pat Patino received his master's degree at Commencement and immediately afterwards sailed for his home in Panama. — Benny Hough '28, who will be remembered for his exploits as poet and postmaster at summer camp, was at the Reunion Banquet. He is working for the Central Maine Power Company on a construction job.

George Logan is working on the construction of a gas and coke plant in Everett, and is living in Boston until the job is completed. His letter contains much that is of general interest to all the Class. He writes: "I am working for the Koppers Construction Company, constructors of coke and gas plants in Pittsburgh, Penna. As yet I have never been in the home office of the company. Instead they assigned me to a contract at Morristown, Penna., not far from Philadelphia so I lived at home until the first of the year when I was sent here on completion of the Morristown job."

"While at home, I saw a lot of people whom we both know. Neil Ross used to come home with me every night. Neil is working as an electrical engineer for the Pennsylvania Railroad. Oh, yes, he is married, too! Ham Williams lived for a short time in Philly. In fact, Dan O'Connell and I saw quite a bit of him. Then, too, I used to see Ralph Vezin, Don Funk, and Bud Booth. They are all down there now and report that they see Brig Allen and Curt McCune regularly. Speaking of Brig, Jerry Palmer reported seeing him in Cleveland while Brigg was there. Jerry is still in Cleveland working for the Aluminum Company of America. On my way to Boston, I had the pleasure of bumping into Bill Young. On the train I found Dick Boyer who was returning to school to clean up. While here I have not seen so many people. I saw Jerry Geisman watching the Technology Crew following the Navy down the Charles. I almost forgot to say that I saw Bill Baumrucker and Fred Danner last February when they were here for a week-end. These two are living in the vicinity of New York." — GORDON R. WILLIAMS, Secretary, 37 Mugford Street, Marblehead, Mass.

1930

In spite of hard times many of our Classmates seemed to have been won over by the weaker sex. We take great pleasure in announcing the following marriages and engagements: Willard H. Cobb married Miss Catherine L. Clarke of Point of Pines, Mass., on June 2. After graduation the couple motored to California and at present are living in Swampscott. — Dwight Horton, Jr., married Miss Norine M. Colbeth of Fall River, Mass. Dwight and his wife went to Texas for their honeymoon, but we do not know where they are planning to live. — Henrietta Johnson became Mrs. Theodore C. Sturtevant on June 14. She was married in the Berkeley Memorial Chapel which we understand was built by one of the bridegroom's family more than a hundred years ago and has been the scene of all marriages in that family since then. — Walter S. Smith married Miss Margaret Critchell on or about May 17, after the five day marriage law had been waived so that the couple could leave immediately for Nova Scotia. — The engagement of Miss Marion G. Dobbins to Joseph E. Rehler and that of Miss Katherine R. Clapp to

1930 Continued

John F. Schipper have been announced. Johnny, we understand, is now working in Peoria, Ill.

Chuck Habley, Hank Halberg, Jack Vennard, and Jack Bennett are working for the Goodyear people in Akron, Ohio. Jack writes that during the hot spell last month he found a nice cool spot to roast up on top of the curing pits. — Art McCullough, Bob Clynnne, and Bob Nelson all enjoyed the average temperature of 140° more or less than prevailed in the steel foundries of Gary, Ind. — Bill Jackson is working for the American Bridge Company in Pennsylvania. — Brownie Taylor is working in Chicago trying to make it a more healthy city. — Joe Harrington worked this summer for the Western Electric Company but is planning to return to Technology for advanced work. — A. E. Huson is working with the Atmospheric Nitrogen Company in Virginia. — G. E. Thomson and Al Latham are with the duPont Ammonia Corporation in West Virginia. — Your Secretary is working with the Roessler and Hasslacher Chemical Company in Perth Amboy, N. J., and hastens to say that while he enjoys the work, he can hardly say as much for the town.

If this news is scant and if your name does not appear herein, write to your Course Secretary. The addresses of those I have heard from are given below. They will be glad to hear from you any time. Course I: Richard N. Chindblom, 5418 North Paulina Street, Chicago, Ill. — Course II: Allen Latham, 1513 Jackson Street, Charleston, W. Va. — Course IV: W. W. Wedemeyer, 4481 San Francisco Avenue, St. Louis, Mo. A complete list of the Course Secretaries was published in the July issue of *The Review*. Find out who your Secretary is and write to him or to the General Secretary. — MORELL MAREAN, *General Secretary*, 180 Gordon Street, Perth Amboy, N. J.

COURSE VI

John Hanley has been working with a transmission party in Missouri during the summer, but is planning to return to the Institute this fall to take up graduate work. He writes that he enjoyed the novelty of having to work except that the heat was a bit too much for comfort. — Zig has been in Europe on his last bender before becoming one of Swope's henchmen at the General Electric Company in Schenectady. He was to have begun work on October 1, but like all of us who signed our life away to General Electric has had another three months' vacation wished on him. — Jean Kresser is in Pittsburgh with Westinghouse, while Ralph Swingle is in the Patent Office in Washington, D. C. — Joe Barrett is rumored to be in Philadelphia with the Electric Company. — Your Secretary has been enjoying his forced vacation in the wilds of Maine. However, he does plan to go to work in the near future with General Electric. — GEORGE LAWSON, *Secretary*, 20 Amherst Street, Arlington, Mass.

COURSE X

Until next June, a considerable portion of the members of this Course will be together in the Chemical Engineering Practice School. Carl Franz, Frank Fahnstock, Jake Sherman, Byron MacKusick, Charlie von Gilder, Ed Nolan, Tony Savina, and your Secretary, who are members of the Boston group, have been spending most of their time looking for all the easy work and free weekends that were promised us if we decided to continue the grind for another year. Ralph Peters, Fluque Rowzee, Jimmy Holden, Teddy Riehl, and others are said to have broiled in Buffalo this summer. At any rate we have not heard from any of them directly.

Chuck Ladd was married in great style on June 14, in Providence, R. I., to Miss Elizabeth Swan. Herm Botzow and your Secretary, having been pressed into service as ushers, were also among those present. After a trip through some of Chuck's favorite country in his home state of Maine, Chuck and his wife sojourned in Bayonne, N. J., for a month while he took a few courses on fuel and gas engineering at the practice school station there. They then motored to St. Louis and at present Chuck is studying patent law. He can always be reached care of Mr. Delos G. Haynes, 818 Olive Street, St. Louis, Mo.

News came from Phil Holt that he has been having an exceedingly large time of it abroad this summer. While he did not furnish many details, we gathered that although most of his time has been devoted to investigating, in his usual serious manner, the various sources of culture, there has also been enough time to enjoy the delights of feminine companionship. Both Phil Holt and Sandy Moss, who has also been in Europe, will join the Practice School group this fall.

If this letter is somewhat short and sketchy, it is because the busy chemical engineers have neglected to keep me informed of their comings and goings. In our next outburst we hope to have more news of the other members of the Class. Any information will be appreciated so if you want to see your name in this paper, write to your Secretary. — HOWARD S. GARDENER, JR., *Secretary*, 18 Westcott Street, East Orange, N. J.

COURSE XIII

Willie Ulcher and Danny D'Antoni were in town over the weekend of August 9, and both are feeling and looking fine. Graduation hasn't changed either of them a bit. Willie has been summering in New York State and plans to take a position in September with the Standard Fruit and Steamship Company as junior engineer on one of that company's ships. D'Antoni is also with the Standard Fruit people and is already planning alterations on several of their ships. He is undecided as to his plans for the fall, but quite probably will go abroad to study or to get some practical experience in one of several British ship-

yards. — Al Bird is now with the Huckins Yacht Corporation in Jacksonville, Fla., trying to learn all about the construction of both power and sailing pleasure boats.

Your Secretary is endeavoring to learn the shipbuilding business from the keel up with the Bethlehem Shipbuilding Corporation at Fore River, Quincy. The work is very interesting and though it keeps me quite busy, I am sure that any letters from members of our Course and Class will be appreciated and answered. — PARKER H. STARRATT, *Secretary*, 30 Wescott Street, Malden, Mass.

COURSE XVI

This is my first attempt as a correspondent, and I must confess that it will be not much more than noble. The fact is that I haven't heard directly from a single man in the Class, and I am only able to report such information as has drifted in to me via instructors, and so on.

The main thing that strikes me is that Course XVI is having difficulty placing its men this year. So far as I can find out, only about half of the men have landed themselves jobs, and a goodly number of them have been forced to take jobs outside the aeronautic industry. This is more than unfortunate, because there is no doubt that we are all well trained, and it seems terribly discouraging to feel that so much work impresses others so little.

J. B. Thomas is working at something or other for Mr. Tony Fokker at Hasbrouck Heights, N. J. I suspect Tony didn't really need him, but — there's only one Thomas in this world! — Hap Gall has gone to Seattle, where he probably is getting all of twenty a week from the Boeing Airplane Company. He was given the one choice of the year, and he surely merited the break he got. — Garrett Green has accepted a position in Washington with Mr. C. L. Offenstien, a consulting aeronautical engineer. — Charlie Richardson is in Akron, Ohio, where he is enrolled in the Goodyear training course. He is as yet undecided as to whether to go to South America to squash bugs with stones (do rubber trees have bugs?), or to stay in Akron to work on the big zeppelins. I hate to be mean, but I can't help but think that the bug game might hold the better future!

Limpisvasti has decided to become a hard working day laborer for a change from the life of the academician, and is wielding a torch at the Curtiss plant in Garden City. His welding will be about 100% perfect in about a week, and he'll probably show the old timers a few things on the second week. — Linderoth seems to have the soft job of all of us. He is designing shaving cream tubes down in New Jersey. We bet they will be streamlined tubes! They will also probably be worked out on the theories of Sources and Sinks. — George Brady is supposed to be working for Henry Ford at one simoleon an hour. He probably arrives at the plant about five minutes late, after driving the ten miles to the plant in something under eight

1930 Continued

minutes. His Technology training will at least stand him a good stead on this score.

Louis Gitzinger became really air-minded, and after bombarding the big guns in Washington with a lot of telegrams was admitted to the Army Air Corps and is now in training at Brooks Field, Tex. We hope he catches the dif-

ference between air-mindedness and light-headedness!—Several men who are known not to be working at the present writing are Red Deyarmond, Louis Harmantas, Papadopoulos, Bill Driscoll, and of course, Fred Dickerman is on his way to Turkey. We understand he already has made arrangements for his harem. — Your Secretary has just completed his

first day at Squantum and will get his first ride in an airplane tomorrow morning if it turns out to be a good day. I would appreciate hearing from the men in the Class so please write me at the address given below, and all mail will be forwarded to me. — FRANK H. HANKINS, JR., *Secretary*, 62 Kensington Avenue, Northampton, Mass.

Technology Club of Florida

Raymond W. Cushman '16, chairman of the aviation committee of the Jacksonville Chamber of Commerce, has been named as a member of the legislative group of the State Chamber of Commerce's aviation committee, it was announced yesterday from the chamber's headquarters offices in this city.

The appointment was made by Frank Redd of Sarasota, chairman of the committee of the whole. The other appointees are: R. V. Waters of Miami, L. D. Reagin of Sarasota, C. L. Waller of Tallahassee, and O. K. Reaves of Tampa.

A meeting of the legislative group will be held within the next thirty or sixty days, Mr. Redd advised Paul Grassfield, director of the state chamber's aviation bureau. In that connection Mr. Grassfield said that he expected to fly down to Sarasota within the next week or ten days to confer at length with Mr. Redd concerning aviation legislation of other states.

Alfred I. duPont '86, has broken into banking circles and is now President of the Florida National Bank of Jacksonville, Fla.

George W. Simons '15, has just been elected President of the International Civitan Club. Some George, eh? — Miss HENRIETTA C. DOZIER '99, *Secretary-Treasurer*, 321 Barnett Building, Jacksonville, Fla.

Technology Association of Northern California

The visit of Dr. Bernard E. Proctor '23, of the Institute's Department of Biology and Public Health, was made the occasion for a special luncheon meeting of the Association in the Engineers Club, San Francisco, August 5.

Dr. Proctor regaled those present with an account of the growth and activities at Technology and then offered to answer questions. Most of the questions propounded had to do with class animosities and difficulties (if any) with Harvard and the local police. It was obvious that Dr. Proctor spoke guardedly of these matters, but sufficient was disclosed to induce several of his audience to recount doings of their own days. Needless to say "a pleasant time was had by all."

The meeting was attended by 19 Alumni representing Classes from 1891 to 1928 and was the largest gathering we have been able to muster since the memory of man runneth not to the contrary.

At the suggestion of Forrest G. Harmon '23, it was decided to try the experiment of having a table reserved at some central eating place one day of each week as an informal luncheon meeting place for Technology men. Jonathan E. Woodbridge '93, President of the Association, appointed Harmon a committee of one to investigate days and places. Following Harmon's report, a bulletin was mailed to 290 Alumni with a return ballot postcard for voting on day and place. It is too early at this writing to determine the final results of this ballot but practically all of the cards returned indicate a choice of the Engineers Club at Pine and Sansome Streets, San Francisco, and indicate that almost any day of the week will be agreeable. Final results will be announced in the next issue of *The Review*. — JOHN K. HELLER '16, *Secretary*, Ford, Bacon and Davis, Inc., 58 Sutter Street, San Francisco, Cal.

Technology Club of Chicago

The summer in Chicago has been interesting in spite of a dull stock market. Many new public works are being pushed forward with great vigor and these, among other things, are helping to keep Technology men busy. Two particularly interesting meetings were held this summer at both of which the Club was honored to have President Compton as its guest. On July 1, a noonday luncheon was held at which many men who had not witnessed the inauguration in June met Dr. Compton and enjoyed his remarks. Forty men were present which is an unusual turnout for a noonday affair during the vacation season. The President's talk was enthusiastically received, for although his address on any subject would be delivered in most interesting fashion, at the luncheon he supplemented the news which had been received through the Press on the new Technology Loan Fund. During the evening of July 24, the Club held a dinner at which President Compton, his equally

illustrious brother, Dr. Arthur Compton, Nobel Prize winner in Physics at the University of Chicago, and Mr. C. E. Johansson, famous Swedish manufacturer of precision gauge blocks, were the guests of honor. The night was very warm, falling as the meeting did during the July heat wave, but no particular discomfort was experienced because of the sky breezes through the Club's new quarters on the 23d floor at 185 N. Wabash Avenue. Many faces not frequently seen at meetings during the past year appeared for this event and among them, to the Club's pleasure, was the Technology delegation from the Standard Oil laboratories in Whiting. The affair was totally informal, and everyone was delightfully entertained. Mr. Johansson gave a demonstration of the remarkable accuracy of his gauge blocks, which are true working standards of length. This demonstration gave rise to a discussion of the molecular limitations of plane surfaces on the steel blocks to which the two Dr. Comptons made authoritative contributions to the enlightenment and entertainment of those present. During the remainder of the gathering the Club furthered its acquaintance with the Comptons, so to speak, who passed the time telling stories of one another. Dr. Arthur Compton had the last inning, during which he exhibited the pictures he had taken with his home movie outfit at the inauguration of the President in June. The pictures had been excellently photographed, and were a real treat to those who had remained at home during the Reunion.

The weekly luncheons, of course, have been held every Tuesday noon in the Club's new quarters. Distinguished guests are the rule rather than the exception. Among them has been Dr. F. H. Newell '85 of Washington, D. C., who has been in Chicago supervising the plans and contracts for the new Bahai Temple which is being added to the architectural masterpieces in Chicagoland. The luncheons are always interesting, there being plenty of discussion of golf, motor boating, business, aeronautics, building, trapshooting, and more golf, among other things in which the members are interested. — ERNEST KOHLER, JR. '29, *Secretary*, 6028 Kimbark Avenue, Chicago, Ill.

YOUR FRIENDS

You undoubtedly have many friends, not Technology men, to whom *The Technology Review* would be of special interest. To be of greater service to Institute Alumni and to Technology, *The Technology Review* is desirous of extending its influence in behalf of Technology and Science by increasing its circulation among receptive people.

For that reason we are eager to learn if you would care to send a year's subscription to *The Technology Review* to some young chap who might be interested in Technology, or to some person who delights in keeping posted on scientific development.

While *The Technology Review* is obtainable to Alumni only through membership in the Association, annual subscriptions for non-Technology people may be obtained for \$3.50, including nine issues published from October to May, inclusive, and in July.

The Technology Review stands ever ready to be of service to M.I.T., to its Alumni, and to people interested in Science.

THE TECHNOLOGY REVIEW
M. I. T., Cambridge, Massachusetts

Gentlemen: Please send a year's subscription starting with the October 1930 issue to

I enclose herewith my check for \$3.50 to cover payment in full.

Signed _____

Class _____

Address _____

Books

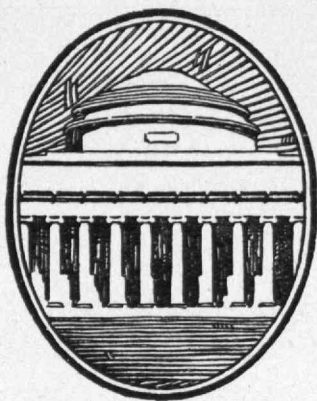
A Review subscriber asked The Technology Review Book Service to select and obtain for him a sound, readable book on mental diseases. A book on that subject was immediately sent to him and his reaction was expressed in a letter as follows:

"Kindly accept my sincere thanks for prompt and invaluable assistance in obtaining for me exactly the type of book desired. . . . This service alone is worth to me many times the cost of a year's subscription to The Technology Review."

The Technology Review Book Service constantly is rendering service to Review readers. It orders books for them at the published price from publishers the world over, and it searches the second-hand book shops for volumes out of print. For others, like the writer of the adjacent letter, it has the happy opportunity of suggesting desirable books. Readers are urged to avail themselves of its services.



THE TECHNOLOGY REVIEW BOOK SERVICE, ROOM 11-203, M. I. T., CAMBRIDGE, MASS.



INFORMATION

THE TECHNOLOGY REVIEW BUREAU exists to supply authoritative information to anyone interested in details regarding the Massachusetts Institute of Technology. It serves as a clearing house for inquiry and aims to further the spread of exact information regarding entrance requirements, outline of courses, subjects of instruction and other information which may be of aid to the students considering undergraduate or graduate study at the Institute.

The Institute publishes a variety of bulletins, fully descriptive of individual courses, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

Ask for the following circulars by their descriptive letters:

AB: For general information, admission requirements, subjects of instruction, ask for Bulletin AB.

C: For announcement of courses offered in Summer Session, ask for Bulletin C.

D: For information on Advanced Study and Research Work, ask for Bulletin D.

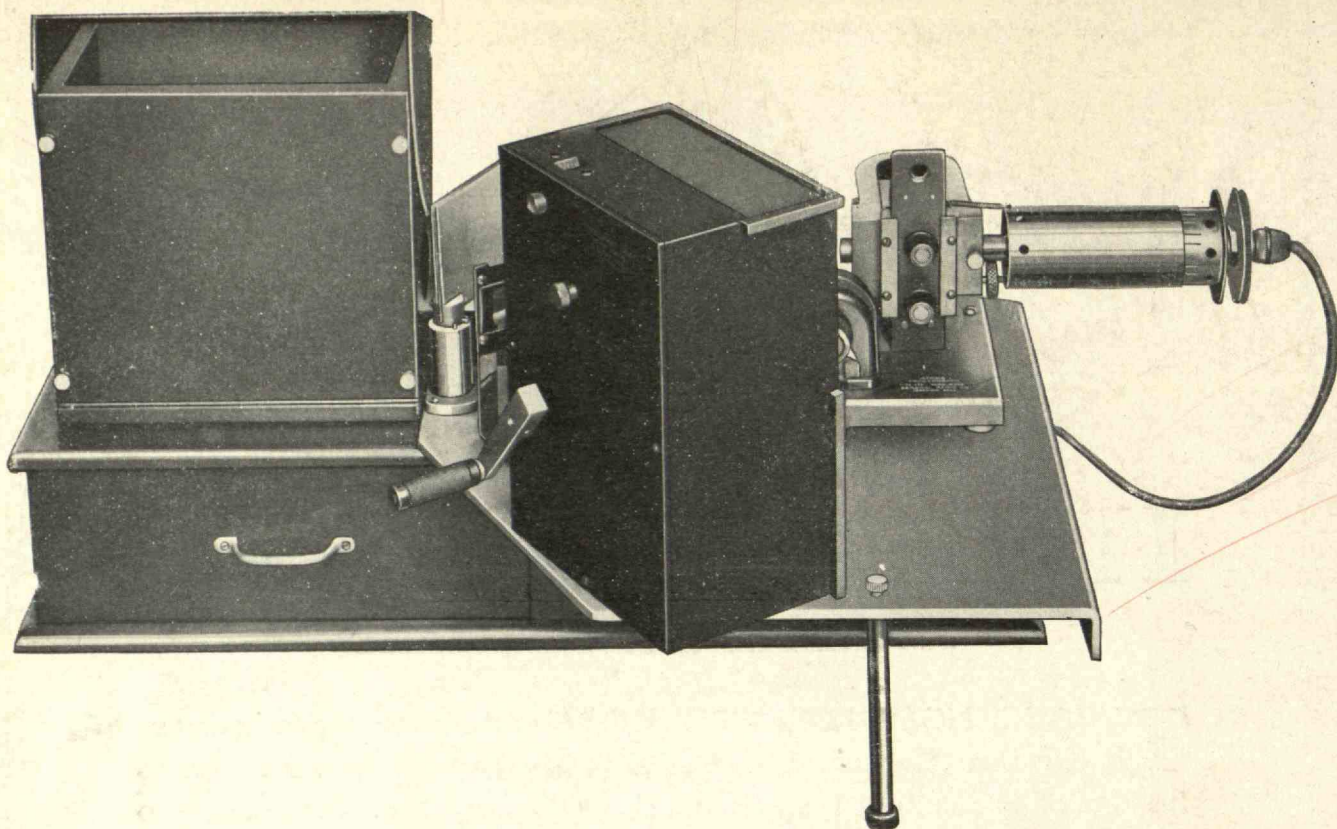
E: For the reports of the President and of the Treasurer, ask for Bulletin E.

Y: For a popularly written explanation of Engineering Courses, ask for Bulletin Y.

All inquiries sent to the address below will receive prompt attention

THE TECHNOLOGY REVIEW BUREAU

ROOM 11-203, MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS



THE OSCILLOGRAPH AND RECORDING CAMERA

THE oscillograph is a current-indicating device with the moving element so constructed that it can follow accurately the instantaneous changes in the intensity of an alternating current. By means of an optical system containing a rotating mirror, the image of the moving element is traced out on a translucent screen so that the actual shape of the alternating-current wave is made visible. Or, the image may be projected into a camera and a permanent record made of it.

By means of microphones and similar instruments, mechanical vibrations are readily converted into electrical currents for analysis purposes so that the General Radio oscillograph and camera shown in the photograph may be used for making all kinds of vibration studies. Physicians use it as the recording mechanism in the electrocardiograph, geologists use it for locating oil deposits, communication engineers use it for making frequency comparisons.

If you are interested in the oscillograph ask us for a copy of Catalog F-T which describes it. We would also remind you that our engineering and manufacturing facilities are available for the developing of new industrial applications of electron tubes. Correspondence is invited.

GENERAL RADIO COMPANY

OFFICES ✓ LABORATORIES ✓ FACTORY
CAMBRIDGE A, MASSACHUSETTS